Railway Age

Vol. 85 July 21, 1928 No. 3

"Sunset Limited" crossing the Mississippi on Southern Pacific Car Ferry.

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Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York.

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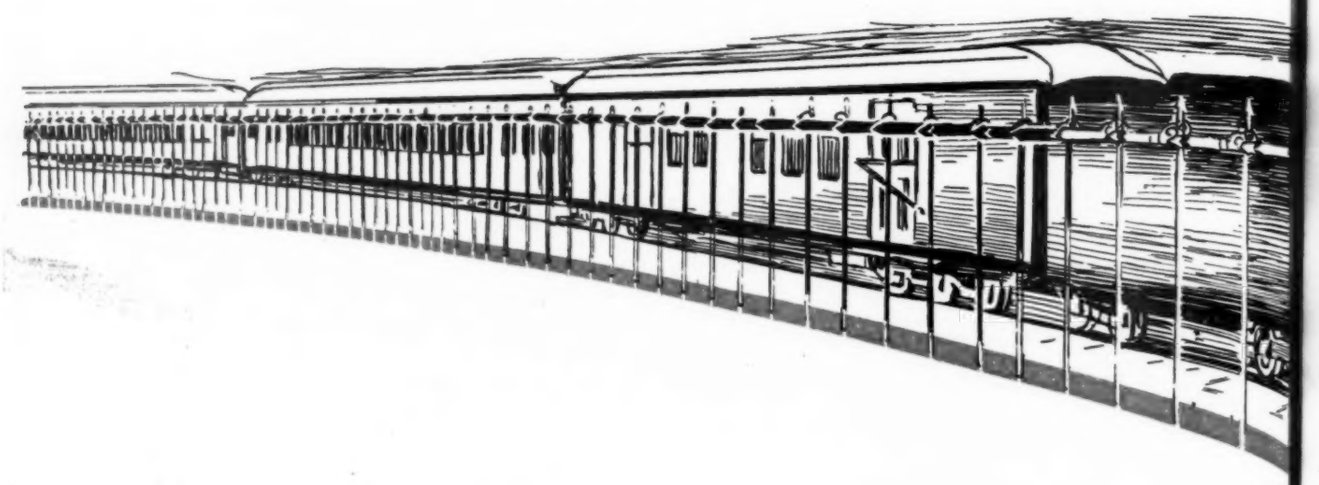
The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free: United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

A Signal Every Foot



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IN OPERATING SERVICE ON 17 RAILROADS

Railway Age

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Savings by Automatic Control of Junction Switch

MOST of the recent installations of automatic interlocking plants involve crossing protection only, but the principle of automatic control can be applied just as successfully to simple interlocking layouts involving a junction switch and even crossover switches. The Great Northern was one of the first railroads to apply the automatic control idea to interlocking practice, and about nine months ago it extended the application to a junction of a single-track branch line with a double-track main line. Experience with these new facilities at Hutchinson Line Junction, Wayzata, Minn., has demonstrated the practicability of this innovation in automatic interlocking protection. A net annual saving of $5,000 has been made by replacing the old manually-operated interlocker with automatic control. That the control circuits can be designed flexibly enough to provide for local switching movements is shown by the article, published elsewhere in this issue, describing this unique installation on the Great Northern. It is particularly significant that the new facilities involve the automatic control of both ends of a facing crossover, as well as of the power switch at the junction. The next few years will undoubtedly witness numerous installations of a similar, or possibly more involved, arrangement of remote power switches, automatically controlled.

The Transfer Engine

SOME inspired statistician should evolve a method of computing the amount of time spent daily by transfer engines in doing nothing. This should include only locomotives, presumably in active service, engaged in interchange. If such figures were available, they would show such a drain on operating revenues as to lead to a thorough study of existing practices. Such partial figures as are available reveal a condition that is far from ideal, to say the least. The practise of keeping another line's transfer engine waiting until, in yardmasters' parlance, the receiving line is "good and ready" to let it move, is a survival of other days in railroading. Ancient rivalries and feuds have been forgotten to a large extent. The evidence that they once existed, however, is to be found in almost any terminal, in the form of transfer engines standing around "popping off", waiting upon the pleasure and convenience of a yardmaster of the connecting line. Steps have been taken in some terminals to correct this wasteful practise. The operating officers of the various lines get together and, by mutual concessions, eliminate much of the standing time; but far more activity should be displayed in this direction at all terminals. The fuel cost of a transfer engine doing nothing is only a small portion of the expense involved. There must be considered, in addition, the wages of the crew, delay to cars and blocking of other traffic, all of which results in unnecessary expense. When a transfer engine starts for a connecting line, with a cut of cars, it should be able to go there and come back, preferably with another cut of cars, in the shortest possible time. All the railways involved would benefit.

The Full Cost of Water Treatment

IT is not many years since engineering and mechanical department officers were divided into two camps in their advocacy of solutions of the locomotive boiler water problem, the former contending for the conditioning of the water in roadside treating plants, the latter favoring the use of boiler compounds in the locomotive tender, and each being equally positive that its method was superior. Of late years, however, as this subject has been studied more thoroughly, the controversy has largely ceased, and there has come agreement that there are places for the use of each method often on the same road. Going still further, however, it not infrequently surprises railway executive and operating officers to learn that both methods are frequently advisable at the same station, and that the construction of treating plants does not eliminate the need for boiler compounds although those required are of a different character. This arises from the fact that in removing the scale-forming constituents of the water in a roadside tank, the tendency to foam becomes more prominent. As a result, while anti-scale compounds are replaced by anti-foaming compounds, the cost of conditioning the water is, of course, the combined expense of roadside and interior treatment. Yet, not infrequently where this combined treatment is necessary, the presentation of the suggestion for roadside treatment makes no mention of the secondary treatment, either in the statement of the case or in the estimates of cost and of economies. The result is, of course, to create an unfair comparison with existing practices and a misleading impression, with the result that, when the need for further treatment of water coming from a treating plant is recognized, the treating plant is condemned unjustly. While the chemistry of water treatment is not simple, it has been developed with sufficient thoroughness to enable any competent water engineer to determine the full treatment that any normal water will require. This being so, the complete treatment that will be required, whether chargeable entirely to roadway or in part to mechanical department accounts, should be set forth in reports and in estimates so that those who are called on to pass on recommendations for treatment may have all the facts.

The Life of All-Steel Freight Cars

THOSE interested in the general subject of the service life to be expected from all-steel freight equipment, will find considerable interesting information in an article, appearing elsewhere in this issue, which gives an account of the thirty-one years of service of the first Bessemer & Lake Erie all-steel hopper cars. The two hopper cars, No. 5499 and No. 5500, the first to be designed along lines used in present-day open-top car design, were built in 1896. Since that time, these cars have each traveled over 222,000 miles, largely in ore, coal and limestone service. This information, and the policy pursued during the past thirty-one years in maintaining these cars, is worthy of consideration by both executive and mechanical department officers. It will be noted that parts of these cars were replaced when they became worn out, without at any time completely rebuilding the cars. At present many railroads pursue the policy of tearing the car down completely and practically rebuilding with new or reclaimed material each time it comes into the shop for heavy repairs. As was brought out in these columns several months ago, the general policy of steel-car maintenance has an important bearing on the amount of equipment that a railroad must own and operate in order to meet traffic requirements and it is important that a railroad know with a fair degree of accuracy what the average life of a freight car on its lines should be. A life of 31 years without rebuilding is exceptional for steel freight cars. Fourteen years between heavy rebuilding is sometimes attained, but eight years is nearer the average life for this type of equipment between major repairs or rebuilding of the body. The economical length of this period has been a subject for discussion ever since the all-steel equipment began to supersede cars of wood construction. The permanent exhibit of four cars, which has been established by the Bessemer & Lake Erie at its Greenville, Pa., shops, together with the information that has been collected relative to the service life of these cars, affords an excellent opportunity to all those interested to study the economics of an interesting life history involving an unusual maintenance policy.

Why New Shop Machinery Is Needed

THE following unusually concise statement of the necessity for modern tools for locomotive and car shops is quoted from a recent article in Machinery by Sir Henry Thornton, president of the Canadian National: "There are two principal reasons for buying new machine tool equipment; the first and most urgent is that when a tool becomes old and inefficient to the extent that it is undependable, causing delays by breaking down, and is too light to handle work on the modern locomotive, it should be replaced; the second reason is that with modern machinery the cost of repairs can be reduced. Also, in addition to saving labor on the machining of work, which might warrant the purchase of new machine tools, it frequently happens that enough idle time of the locomotive can be saved to make the purchase of new machinery a good investment. This phase of locomotive maintenance is one that is worthy of attention." After calling attention to the well-known facts (1) that the general introduction of high-speed cutting tools has made many old shop tools obsolete and uneconomical to operate, and (2) that the increased use of grinding machines promotes more rapid production of accurate, durable parts, Sir Henry paid the following tribute to the modern designer of machine tools: "The machine tool designer is to be complimented on the recent advance made as a result of research and study. The improved work in locomotive and car shops has not only greatly increased the efficiency of locomotives and cars, but has also gone a long way toward reducing the cost of railroad equipment maintenance." Railway shop work consists primarily of maintenance operations, practically none of which are repetitive to the extent of those common in the autmotive industry. It is a mistake too frequently made, however, to assume that each locomotive or car must be handled as a separate unit and the parts machined or repaired individually. Many operations on car wheels and axles, locomotive wheels, driving boxes, shoes and wedges and valve motion parts, to mention only a few, lend themselves more or less to handling on a production basis, and for this work the greatest possible advantage should be taken of the modern machinery made available through the experience, research and intensive effort of progressive machine tool manufacturers.

Great Changes on the Railroads

THE extent and rapidity of the changes that are occurring in the railroad industry, and which railway managers must take into account in making expenditures, and in changing and improving operating methods and service, are well illustrated by comparative facts regarding railway operation and its results in the first one-half of 1928 and in corresponding parts of previous years. Only a comparatively small part of the statistics regarding operation and its results in the first one-half of this year are as yet available, but those that are available, and what they show regarding prevailing trends in the industry, are sufficient adequately to indicate what complete statistics for the first one-half of the year will show.

Passenger business was the smallest in 18 years. Freight business was the smallest since 1925. In consequence, total earnings were the smallest since 1925.

The average wage paid per employee was the largest since 1921. In spite of this, total operating expenses were the smallest since 1922. There are numerous reasons why operating expenses were the smallest in six years. An important one is, of course, the decline in traffic. To this has been partly due the reduction in employees to the smallest number since 1922. The reduction in the number of employees more than offset the effect of the advance in the average wage, and, in consequence, the total amount of wages paid was the smallest since 1922.

Economy of operation has been increased in many ways, in spite of improvements that have been effected in service. The average number of tons of freight loaded in each car was the smallest since before the war; the amount of freight loaded per car is not under the control of the railways. Nevertheless, the amount of service rendered hourly by the average freight train was the greatest in history. This was due to the facts that, first, the number of cars handled in the average freight train was the largest in history, and, secondly, the average speed with which freight trains were moved was the greatest in history.

In spite of the economies in operation effected, the

total net operating income earned was the smallest since 1925. The investment in the properties was, of course, the largest in history, and the resultant of the decline in net operating income and the increase in property investment was that the return earned upon the total investment was at the lowest annual rate since 1922.

It is doubtful if there is any other industry in the country in which more important changes that affect every phase of its business are occurring than in the railroad industry. This is true because we are passing through a period of great social and economic changes, and, as the railways serve every other industry, and every territory, community and class of the people, they are affected by all the changes that occur in every other industry, in every territory and in every class of society.

Railway Pension Plan Problems

RAILWAY pension plans are discretionary, not contractual, and are not funded. In all fairness, however, it should be recognized that railway executives have in recent years been watching closely the pension developments and tendencies in the industrial field. Among the very first to start the payment of pensions, they adopted simple, and in many cases, informal plans. The rather startling facts which have become evident in the last few years as to the ultimate extent of pension costs and the advisability of strengthening the stability of pension plans by building up adequate reserves has found them badly handicapped in some respects. For one thing, their earnings for many years have been most disappointing; for another, the strictness with which their financial transactions and accounting practices are regulated in detail has made it difficult to go about the modification and revision of their pension plans.

There are, for instance, certain railroads which desire to build up pension funds or reserves. They are told by the Interstate Commerce Commission that it will allow no charges to operating expenses for pensions except as they are actually paid. Appropriations to the pension reserves must, therefore, be made from surplus. The Bureau of Accounts of the Interstate Commerce Commission in its proposed revision of the accounting classifications continues this rule but adds the following note:

"In case the carrier's pension plan establishes an irrevocable or contractual obligation for the payment of pensions, it shall, when so authorized by the Interstate Commerce Commission, accrue reserves through charges to this account (Account 465, Classification of Operating Expenses), to cover its actual liability for such payments. Applications to the commission to grant authority to accrue such reserves to this account shall contain a full statement of the facts which, in the judgment of the carrier, establish an irrevocable or contractual obligation. This statement shall be accompanied by complete particulars of the carrier's pension plan. No charges to this account shall be made in anticipation of discretionary pension payments in the future."

While the railroads recognize the moral obligation to continue to pay pensions, and while there is apparently little likelihood of their ever being discontinued, it is quite possible that future developments may make modifications or revision necessary. Moreover, the directors of the railroads, in the light of all the uncertainties of the situation and the fact that the regulating authorities have consistently failed to carry out the provisions of the Transportation Act, since its enactment in 1920, as to the return to be earned by the railways, cannot see their way clear irrevocably to commit their properties to pension plans which will call for increasingly heavy expenditures far into the future.

Industrial executives have faced this same problem and they, too, are having great difficulty in finding ways and means of adequately funding their pension plans, although, as has been pointed out in previous editorials, a number of promising experiments are being made in the effort to overcome the difficulty.

Apparently the Interstate Commerce Commission Bureau of Accounts takes the position that the public should not be asked to pay for a charge to operating expenses for pensions (beyond actual pension payments) when there is no definite assurance that the money will be used for the purpose intended. Is it absolutely necessary to incorporate the contractual feature in a pension plan to insure this being done? Presumably, the commission does not question the value of, or the justification for, old age and disability pensions. Some railroads, at least, are fully awake to the advisability and, indeed, necessity, of funding the pension plans in order to distribute the load more equitably over the years in which the obligations are incurred because of the actual service rendered by the employees who will be entitled to pensions in the future. The neglect adequately to fund pension plans may, in the future, prove financially embarrassing to the railroads and either cause a reduction in pension allowances or force the discontinuance of pension payments.

Is this situation not a direct challenge, both to the Interstate Commerce Commission and the railroads, to bring to bear the very highest type of constructive statesmanship in order that some reasonable agreement may be arrived at which will not only favor the continued payment of pensions, but also will tend to extend this practice more generally in the railroad field? Cannot some way be found to provide for the adequate funding of pension plans so as to prove least embarrassing to the railroads and, at the same time, insure the continued payment of pensions, and, in the long run, prove to be the best policy in the public interest? Lack of the exercise of such statesmanship at this time may force a continuance of conditions which, admittedly, will lead to higher ultimate costs and even to possible disaster so far as the payment of pensions is concerned.

Knowing the Costs

NO railroad limits itself in its accounting and statistical activities to the bare requirements of the Interstate Commerce Commission. These latter figures give a fair picture of an entire railroad or of all the railroads by regions or for the country as a whole. They do not, however, meet all the requirements for information of the officer in charge of a department or of a district or a division, who will have supplementary figures for his own territory following the same general plan, or perhaps a plan of his own.

This is a reasonable division in accounting and statistical compilations, since naturally the minutiae of detail with which the local officer must keep in touch cannot be of equal interest to those whose concern is with the entire transportation system.

The local accounting and statistical activities on individual roads may be regarded as the outposts of railroad accounting science. Unfettered by ironclad rules

of division and procedure as is the case with the prescribed uniform accounting, the railroads may try out new ideas and new methods, retaining those which prove successful and discarding those which do not prove their worth. For accounting resembles any other science, such as engineering for instance, in that it needs a laboratory in which new ideas may be tested; theoretical conclusions alone are not safe.

Local accounting plans for determining the comparative costs of varying methods of performing railroad work, or of the relative merits of various materials, are often found extremely valuable in determining railroad policy. Such plans can be put into effect to cover a short period or may be made more or less permanent. Moreover, since plans of this kind do not have to be drawn up to fit all conditions on all railroads, they may be modified as needed to meet local requirements. Knowing costs, especially where there are alternative methods which may show varying results, is important where these can be definitely allocated at an expense in proportion to the probable benefits to be derived from the information obtained. "Cost accounting," to use a rather indefinite term, of this kind has characterized railroad operations virtually since they began, and alert railroad managements are continually improving their knowledge of their operations by these localized plans and studies. Officers who initiate such activities, where there is likelihood of their bearing fruit, deserve the co-operation of their managements.

Significant Changes In Railroad Freight Traffic

THE traffic of the railways has been largely revolutionized within recent years, and is still in a state of revolution. Almost everybody knows they have lost a large part of their passenger business. Only a few realize the extraordinary changes that have occurred in their freight business.

It might be said with little exaggeration that there has been no resemblance between the development of freight business during the period since the war in Europe began and during the equal period of years immediately preceding. The tastes, habits and modes of living of the American people have changed extremely. All these changes are reflected in railroad freight business. The changes in it that have occurred, and their causes, merit detailed and scientific study by railway officers. By getting the explanation of many things that have occurred, they will be enabled better to anticipate the future and to chart the course of railway development wisely.

Railway freight traffic has not been growing as rapidly, either absolutely or in proportion, as it did before the war. In analyzing what has occurred we have divided the years from 1899 to 1927 into four periods of seven years each. The fact should be noted at the outset that any changes in freight business that have occurred during these periods, whether in its rate of growth or otherwise, have been due only in small measure to changes in the rate of growth of population. The smallest increase of population during these periods was 10 per cent and the largest only 15 per cent. On the other hand, in the seven-year period ending with 1906 the number of tons carried one mile increased 75 per cent; in that ending with 1913, 38 per cent; in that ending with 1920, 38 per cent and in that ending with 1927 only 5 per cent. The increase between 1920 and 1926 was 8 per cent.

There is still greater significance in the statistics regarding "tonnage originated," because they are not affected by changes in the distance freight is hauled, and therefore throw more light on the amount of commodities of the various kinds that the people are producing, consuming and shipping by rail. In the seven years ending with 1906 the tonnage originated on the railways increased 85.6 per cent; in the seven years ending with 1913, 28.3 per cent; in the seven years ending with 1920, 19.3 per cent, and in the seven years ending with 1927, only 2.1 per cent. When we so combine the figures as to cover two periods of 14 years each we find that in the 14 years ending with 1913 the total tonnage originated on the railways increased 610,500,000 tons, or 138 per cent, while in the 14 years ending with 1927 it increased only 230,000,000, or but 22 per cent.

Of no less significance are the facts showing the increases and decreases that have occurred in the originated tonnage of different classes of commodities. In an accompanying table all commodities are grouped, as far as practicable, in accordance with the classifications first made many years ago by the Interstate Commerce Commission. The figures show that in the 14 years ending with 1913 there were increases in the tonnage shipped by rail of all these groups of commodities, while in the 14 years ending with 1927 there were increases in only 18 of these groups, and decreases in 17.

Influence of Motor Vehicles

No classification of commodities can be satisfactory for many years because of the number of new commodities brought into production, especially in a country in which such changes are occurring as in the United States. The motor vehicle has been causing more economic and social changes in this country within recent years than any other single influence, but as it did not appear in the early classifications of commodities, it appears in the accompanying table only as a part of "other manufactures," etc. Its influence is, however, more or less easily traceable in the figures. To it is due relatively the largest increase in tonnage shown during the last 14 years—that of 398 per cent in petroleum and oils. To it must also, no doubt, be largely attributed the increase of 83 per cent in the tonnage of stone, sand and other like articles, which, no doubt, have been used largely in highway construction. No doubt it is further significant of the influence of the automobile that in the seven years ending with 1927 the three largest increases in tonnage of the groups of commodities given in the table were, petroleum and other oils, 75.3 per cent; sand, stone, etc., 64 per cent; cement, brick and lime, 47 per cent. The increase in the tonnage of motor vehicles during this period was 116 per cent.

The decreases in railroad tonnage that have occurred are no less significant than the increases. The horse largely went out of business within the last 14 years, and there was a reduction of 35 per cent in shipments of hay. There was a reduction of 38 per cent in the tonnage of household goods and furniture originated. This doubtless is a reflex of the tendency of urban population to increase faster than rural, and for families living in cities to reduce the number of rooms they occupy in order to own an automobile and "keep up with the Joneses." There was a reduction of 81 per cent in the tonnage of wines, liquors and beers originated, which indicates either that the production and consump-

tion of alcoholic beverages were reduced, or that they were transported more largely by motor truck and automobile, and that home brews were more largely resorted to.

Changes in "Tonnage Originated"

COMMODITY	Tonnage originated in 1927	Per cent increase 1913 over 1899	Per cent increase 1927 over 1913
PRODUCTS OF AGRICULTURE:			
Grain (a)	50,133,109	84.4	0.5
Flour	10,027,406	72.2	6.7
Other mill products	10,178,887	140.7	31.9
Hay	4,467,863	93.4	— 34.8
Tobacco	1,053,022	45.1	4.9
Cotton	4,181,913	13.8	18.6
Fruit and vegetables (b)	16,756,940	236.6	8.6
Other products of agriculture (c)	16,575,833	262.8	86.8
TOTAL	113,374,973	105.0	10.4
PRODUCTS OF ANIMALS:			
Live stock (d)	15,841,082	84.5	9.3
Dressed meats	2,986,486	69.6	24.5
Other packing-house products	1,956,946	20.3	— 15.8
Poultry, game and fish	406,506	70.4	— 51.3
Wool	355,669	22.6	— 7.8
Hides and leather	1,010,348	56.2	— 5.2
Other products of animals (e)	3,452,141	284.1	— 17.1
TOTAL	26,009,178	86.3	1.3
PRODUCTS OF MINES:			
Anthracite coal	72,175,598	56.0	— 8.6
Bituminous coal	361,842,816	160.8	28.4
Coke	16,178,072	127.6	— 54.9
Ores (f)	78,563,570	253.0	— 17.2
Stone, sand & other like articles	161,782,141	288.8	83.0
Other products of mines (g)	23,189,071	255.9	88.4
TOTAL	713,731,268	160.3	20.5
PRODUCTS OF FORESTS:			
Lumber (h)	42,858,471	96.1	— 34.8
Other products of forests (i)	56,532,051	92.0	101.4
TOTAL	99,390,522	94.8	6.0
MANUFACTURES:			
Petroleum and other oils (j)	53,556,680	164.5	398.3
Sugar	5,584,281	93.2	61.0
Naval stores	17,203	65.6	— 98.2
Iron, pig and bloom	11,487,873	31.6	— 25.4
Iron and steel rails	2,595,946	53.1	— 44.3
Other castings and machinery	5,176,294	120.1	— 62.3
Bar and sheet metal (k)	34,776,547	139.9	105.8
Cement, brick and lime (l)	51,537,413	285.8	29.9
Agricultural implements, wagons, carriages, tools, etc. (m)	3,109,112	59.3	— 5.9
Wines, liquors and beers (n)	804,125	112.6	— 81.3
Household goods and furniture (o)	1,369,219	112.2	— 37.9
Other manufactures— Merchandise, Miscellaneous, L.C.L. freight (p)	159,505,909	133.5	30.0
Total manufactures & L.C.L.	329,520,602	132.4	38.4
GRAND TOTAL	1,282,026,543	138.2	21.8

(a) Wheat, corn, oats and other grain.
(b) Citrus fruits, other fresh fruits, potatoes, other fresh vegetables and dried fruits and vegetables.
(c) Cottonseed and products, except oil and other products of agriculture.
(d) Horses and mules, cattle and calves, sheep and goats, and hogs.
(e) Eggs, butter and cheese, and other products of animals.
(f) Iron ore, other ores and concentrates, and base bullion and matte.
(g) Crude petroleum, asphaltum, salt, and other products of mines.
(h) Lumber, timber, box shooks, staves and headings.
(i) Logs, posts, poles and cordwood, ties, pulp wood and other products of forests.
(j) Refined petroleum and its products, and vegetable oils.
(k) Bar and sheet iron, structural iron and iron pipe and other metals, pig, bar and sheet.
(l) Cement, brick and artificial stone, and lime and plaster.
(m) Agricultural implements and vehicles, other than automobiles.
(n) Beverages.
(o) Household goods and second hand furniture and furniture (new).
(p) Sewer pipe and drain tile, automobiles and auto trucks, ice, fertilizers, paper, printed matter and books, chemicals and explosives, textiles, canned goods, other manufactures and miscellaneous, and L.C.L. freight.

However difficult some of the figures given in the table may be to explain, they do in a general way plainly indicate a tendency for the production of commodities that afford the railways a large tonnage to increase relatively less rapidly within recent years than the production of commodities into which labor enters more largely and which consequently have a greater value in proportion to their bulk. In the 14-year period ending with 1913 the tonnage of manufactured commodities increased less in proportion than that of minerals and only slightly more in proportion than that of farm products. On the other hand, in the corresponding period ending with 1927 the tonnage of manufactured commodities increased almost four times as much in proportion as that of farm products, almost twice as much in proportion as that of products of mines, and more than six times as much in proportion as that of products of forests.

It is well-known that for a long time the tendency has been for the American public to increase its consumption of luxuries more in proportion than its consumption of necessaries, and this means, of course, that an increasing proportion of its productive power is being devoted to the production of luxuries. Is not a greater amount of capital and labor usually required to produce a ton of luxuries than a ton of necessaries, and does it not follow that the tendency mentioned will result in a declining rate of increase in the tonnage available for transportation in proportion to the amount of capital and labor devoted to production?

The figures given do seem to suggest, whatever may be the causes, that the rate of growth of railroad freight business cannot reasonably be expected to be as rapid in future as it was before the war. Not only does the tonnage produced seem to be increasing at a declining rate, but more traffic is being diverted to waterways, highways and other means of transportation. Probably the number of tons of freight the motor vehicle has been taking from the railways has been under-estimated.

Improvements to Effect Economies

The railroads now have surplus capacity. If freight business is not going to increase as formerly the need for increasing railroad capacity will be reduced. This will tend to make the solution of the railroad problem easier in some respects and more difficult in others. The faster traffic increases the faster it is necessary to expand facilities with which to handle it. But a rapidly growing traffic tends to afford increased gross earnings and thereby to make it easier to stand both advances in wages and reductions of rates. By the same token, the less traffic grows the more difficult it becomes to stand advances in wages and reductions of rates. The need for raising and investing new capital is not obviated, but there is created a necessity for devoting relatively more brains and capital to all kinds of improvements in plants and methods that will tend to reduce operating expenses. The duty of resisting unreasonable advances in wages and unreasonable reductions of rates becomes more imperative, because it is far more difficult to maintain net operating income in an industry whose business is increasing slowly than in an industry whose business is increasing rapidly.

Perhaps the recent trends of railway freight business are only temporary and therefore deceptive. Possibly effects of the war are still being felt that will gradually disappear. Possibly the country's industrial plant became temporarily over-developed, and there will be a much larger increase of freight business if it begins to be largely expanded again. It undoubtedly is true, however, that, excepting here and there, railway freight business is not growing as it formerly did, and that until there occur changes in conditions that cannot now be foreseen it will be wise for most railway managements to do less than was formerly necessary to provide for the handling of more traffic, and relatively more for the purpose of effecting improvements that will tend to reduce operating expenses by saving labor, fuel and materials.

New York Central. 750 hp., Oil-Electric Locomotive

Oil-Electric Freight Locomotive

750-Horsepower unit to be used for road service on the Putnam division of the New York Central

By S. T. Dodd

Railway Engineering Department, General Electric Company, Schenectady, N. Y.

THE electric locomotive recently completed by the American Locomotive Company, General Electric Company and Ingersoll-Rand Company for the New York Central has the distinction of being the first oil-electric locomotive to be built specially for road service.

This locomotive is designed for freight service on the Putnam division of the New York Central, and has sufficient capacity for handling trains commonly used on this division; that is, a weight of from 500 to 550 tons trailing. It will make the same running time as is now being made by steam locomotives, and in general is intended to duplicate the present performance.

The principal dimensions and data relating to this locomotive are as follows:

Length inside of knuckles	52 ft. 1 in.
Height over-all	14 ft. 9½ in.
Width over-all	10 ft. 4 in.
Total wheelbase	42 ft. 10 in.
Rigid wheelbase (driving)	17 ft. 6 in.
Rigid wheelbase (truck)	6 ft. 2 in.
Diameter of driving wheel	44 in.
Weight in running order	295,000 lb.
Weight on drivers	175,000 lb.
Maximum tractive effort at 30 per cent coefficient	52,500 lb.
Tractive effort, one hour rating	30,600 lb.
Tractive effort, continuous	20,800 lb.

Cab and Running Gear

The running gear of the locomotive is of the 2-D-2 type, having four driving wheels in the main frame with a rigid wheelbase of 17 ft. 6 in. Two two-axle trucks equipped with 30-in. wheels are provided for guiding purposes.

The main frame is formed of cast steel side frames and cross ties supported on a system of equalizers and semi-elliptic springs resting on the journal boxes. Couplers are A.R.A. Type D, with friction draft gear mounted on the end frames.

Brakes are applied to all wheels, and include four 10-in. by 10-in. brake cylinders acting on the driving wheels, and two 6-in. by 8-in. cylinders acting on the guiding trucks.

The cab underframe is a Commonwealth Steel casting carrying the weight of the power plant, including engine and auxiliaries. The cab includes three sections, a central compartment for the main apparatus and an operating compartment at either end. The central compartment contains the engine generator set, together with contactors and other control apparatus. At one end of this compartment is a fin-tube radiator for cooling the circulating water from the engine. Two fans located near the floor draw air from the outside, forcing it through the radiator and discharging through the roof of the locomotive. There are two fuel oil tanks of 300 gallons capacity, one at each side of the cab. The water tank is mounted on the roof in order to maintain a water level above the cylinder head. A gage in the cab indicates the quantity of water in this tank. Air compressors are also located in this cab, as well as the battery-charging motor-generator set and a motor-driven filter for the engine lubricating oil.

An ammeter indicating motor current, a voltmeter indicating main generator voltage, and a thermometer

indicating the temperature of the engine cooling water are located in each operating cab, with the customary gage lamps for illumination.

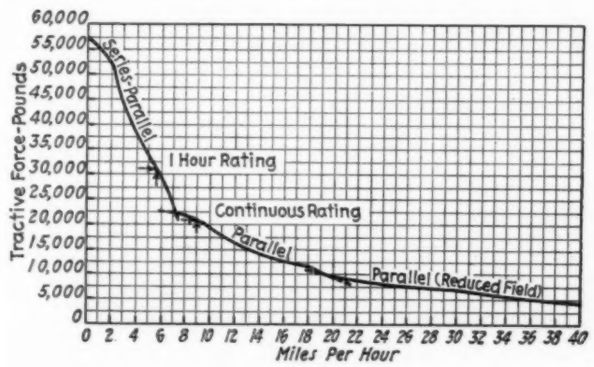
Oil Engine

The oil-engine is a four-stroke, six-cylinder unit with 14¾-in. bore and 16-in. stroke. It will develop 750 horsepower at a speed of 500 r.p.m. The engine is of

Operator's Cab

the solid-injection type, the fuel being delivered to the cylinders by a pump, mechanically connected to the engine. The fuel oil is injected through a distributor which is timed to register with the power stroke of each cylinder.

The engine is started by compressed air from starting air reservoirs which are charged during the oper-



Relation of Speed to Tractive Force

ation of the engine from a compressor which is geared to the engine. In addition, a small hand-started gasoline engine-driven compressor can be used for obtaining the initial charge in these reservoirs in case air pressure is lost during shut-down.

The engine governor is of the remote-controlled type actuated by a series of pneumatically-operated pistons, each controlled by a magnet valve. Each piston establishes a definite setting of the engine governor. The position of the master controller determines the selection of governor settings and thus sets the engine speed for various outputs. Remote control of the governor was used to make possible multiple-unit control of two locomotives.

Electrical Equipment

The electrical equipment includes a main generator and an auxiliary generator direct-connected to the engine, four traction motors, control equipment, and electric auxiliaries, lights and instruments.

The main generator is of the multi-polar type carrying eight main poles and eight commutating poles. The magnet frame is fabricated from rolled steel, with the halves welded together. The armature core is made up of solid discs instead of the usual segment type. The spider is of cast steel and the brush-holder yoke of aluminum. The generator is provided with a single bearing of the end-shield type, with the exciter mounted

Battery Charger, Air Compressor, Exciter and End of Generator

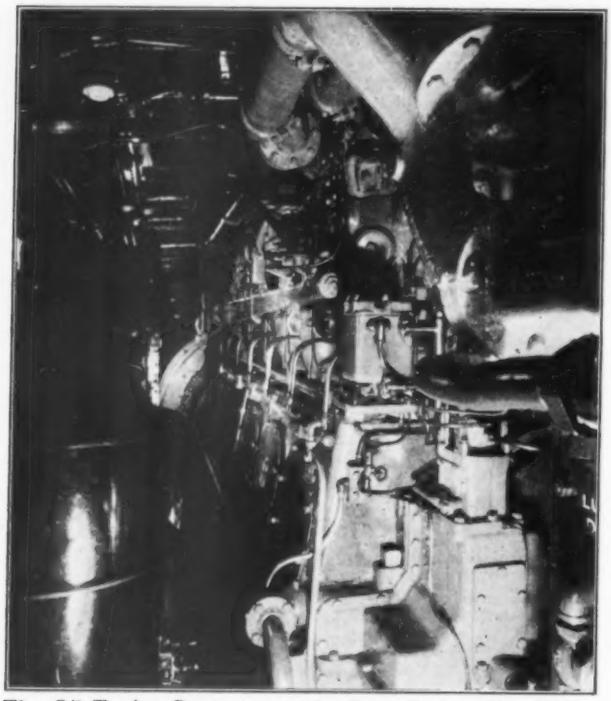
on the extended shaft. The generator shaft is extended at the rear of the armature, with provision for coupling to the engine. There are three distinct field windings: 1. A small amount of differential series field; 2. a self-excited shunt field; 3. a separately-excited field.

The self-excited field furnishes the principal excitation for the generator. The separately-excited field receives current from the auxiliary generator. A resistance is provided for use in series with this field, proportioned for each governor setting and engine speed so that the characteristics of the generator correspond to the required torque of the engine at each particular speed. By means of this combination approximately equal increments of tractive effort are obtained at the driving wheels for each controller step. The controller thus establishes a definite setting of the engine governor, and, as a result, a setting of the field strength which is most desirable at the various engine speeds. These functions are simultaneously controlled by the master controller.

The auxiliary generator mounted on an extension of

the main generator shaft supplies the separate excitation at 250 volts for the main generator, as well as power for the auxiliaries. This generator is so regulated that it maintains a practically constant voltage throughout a wide range of engine speeds.

Four GE-286, 600-volt, single-geared, commutating-pole traction motors, one mounted on each driving axle, drive the locomotive through a 72/17 gear ratio. These motors and gears are the same as those used on the New York Central Class Q switching engines.



The Oil Engine-Generator at the Rear, Locomotive Heater on the Left

Three running combinations of the traction motors are used: series parallel, parallel, and parallel with reduced fields. The various motor combinations are obtained through electro-pneumatic contactors and a reverser actuated by the reverse handle on the master controller. The transfer from series parallel to the parallel position is effected by interlocking between contactors and by cushioning resistors so that the change is made from one connection to the other with full throttle on the engine and without reducing the engine speed during transition.

Compressed air for the brakes is supplied by a motor-driven air compressor having a displacement of 100 cubic feet per minute. Power for the compressor, blowers and motor-generator set is supplied from the auxiliary generator. The field of this generator is excited at 32 volts and is regulated by a carbon-pile regulator to maintain its terminal voltage at 250 volts through a range of engine speeds from 240 r.p.m., the idling speed, up to 500 r.p.m.

The 32-volt supply for the lighting and control circuits is obtained from a motor-generator set driven from the 250-volt auxiliary circuit. A carbon-pile regulator in the field of this set maintains a constant voltage for the auxiliary circuits as well as for charging a 32-volt, 135-ampere-hour storage battery. This battery supplies the lighting circuits when the engine is not in operation.

Power for radiator fan motors and traction motor blowers is supplied from the auxiliary generator. Provision is made for operating the blowers either in series or parallel connection. These combinations are controlled by master switches in the engineer's cab.

Cab lights are provided in both the operating and engine compartments. Droplights in the engine compartment are provided for inspection while in service. All lights, including the headlights, are supplied from the 32-volt circuit, and a dimming resistance is provided for each headlight.

In addition to the meters located at each operating position, there is also provided an integrating watt-hour meter connected to measure the main generator output. An ammeter also indicates the amount of charge or discharge in the storage battery circuit.

Train line couplers at each end of the locomotive permit the operation of two locomotives in multiple unit with the control of both from an operator's position.

The American Locomotive Company supplied the mechanical parts and made the installation. The Ingersoll-Rand Company furnished the oil engine, and the General Electric Company manufactured the electric equipment.

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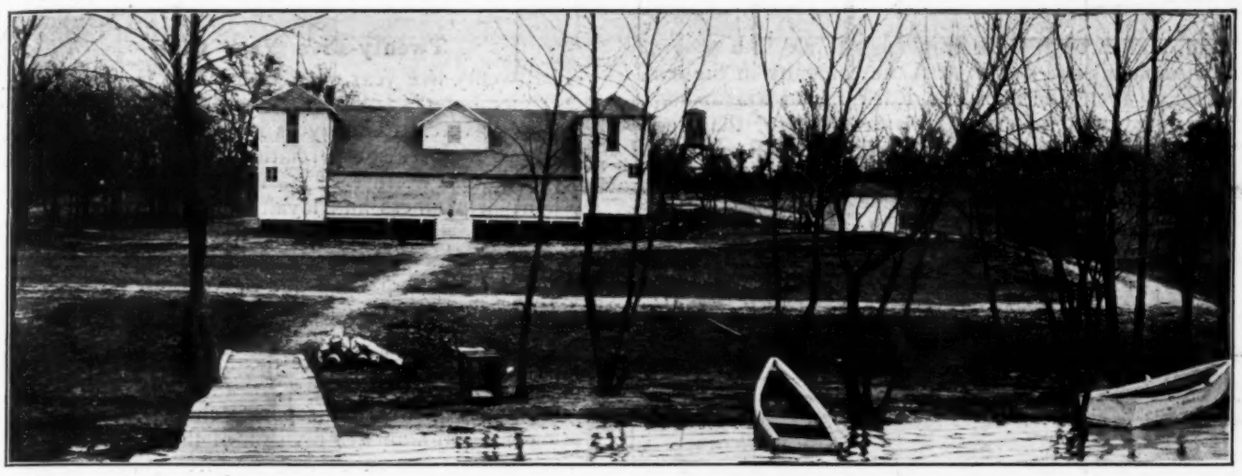
A Side-Door Gondola on the Japanese Railways



Club House Built by Ft. Worth Employees

Public Relations Work Extended Through Employees Clubs

Organizations of the Chicago, Rock Island & Pacific benefit the railroad and the public

EMPLOYEE organizations of the Chicago, Rock Island & Pacific, which have been formed voluntarily, have developed such a keen interest in serving the public that they have been placed under the sponsorship of the department of personnel and public relations. The formation of employee organizations started in 1906 and at present they include children's clubs, the Twenty-Five Year Club, the Rock Island Railway Club, "Get the Business" committees, bands, credit unions, athletic clubs, and country clubs.

The fundamental purpose of the organization of the department of personnel and public relations on the Rock Island lines in 1923, was to encourage and develop a spirit of friendly inter-departmental interest and co-operation, to the end that the service available to the public might be not only acceptable because of its efficiency but desirable because of the definite and real interest of the employee in rendering that type of service. The activities of the department were founded on the policy announced by President James E. Gorman, and published broadcast over the railroad, that: (1) Every employee is entitled to and must be given the utmost fairness and consideration, by his superior; (2) Every patron of the railway is entitled to and must be given a dollar's worth of courteous, intelligent, prompt and efficient service for every dollar he pays the company. It has been the purpose to effect the adoption of this policy in every contact between the official staff and the rank and file of the employees, and between members of the organization in every capacity and the public, between whom contacts are constant.

The adoption of the policy as a part of the every-day business life, and the belief in its sincerity, have found expression in many ways; the organization of groups of employees in various specific activities is one of these, creating as it does a closer acquaintance, a greater feeling of interrelationship, and a keener desire to give the best service. These movements have originated among the employees themselves. Encouragement has been given to their further development as a definite means to create a spirit of unity. It is felt that there is a distinct difference between the man who feels that he merely has a job with an enterprise and the man who feels that he is a vital part of an institution, no matter how humble his assignment may be. The democratic character of the clubs, in which officers and employees meet on common, friendly ground, is an element worthy of note and unquestionably adds to the efficiency of the organization. The clubs afford an opportunity for men in different departments to come together and gain a real sense of their interdependence and the greater value of their intelligent, co-operative and collective efforts. This unquestionably finds reflection in the service provided and consequently in the success of the institution.

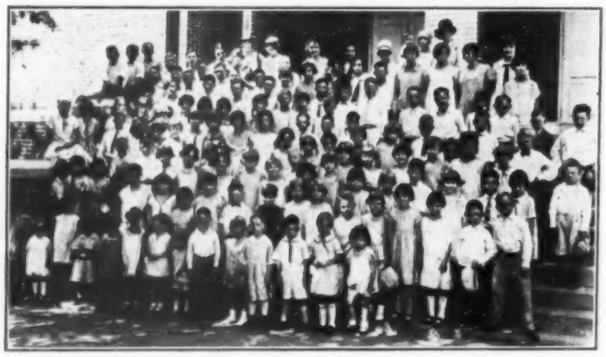
There is nothing altruistic or sentimental about the program. Its purpose is definite—to produce better results, to increase the efficiency of the railway organization, and to improve its earnings. This is accomplished in a perfectly natural way by the creation of a spirit of fraternalism rather than paternalism, of friendly confidence rather than the contrary. It carries with it the inseparable thought that as the railway prospers, those in its employ will be benefitted, and the public, in the territory which the railway serves, will reap the benefits of more efficient and satisfactory service, which in turn makes for a greater respect for the institution by the communities it serves.

Believing that there was an opportunity to bring about an increasing interest on the part of the families of Rock Island employees in the success of the rail-

road, and through these employees to aid in a program to stimulate good-will toward the company in the communities along the lines, the Rock Island Magazine, in December, 1926, sponsored a movement for the organization of clubs composed of children of Rock Island employees at various division points. These clubs were called "Diamond Clubs," a name chosen as the best from a number of titles suggested at that time.

Diamond Clubs Instruct Children

The program which has been followed since the inception of the movement has been along constructive



Children of El Reno, Okla., Employees Organize Club

lines, keeping the railway before the children, without being "teachy," the theory being that a certain percentage of these sons and daughters of present employees will sooner or later themselves be employees of the road and will enter the service with a better appreciation of the Rock Island institution than probably was the case with their fathers. Also, those who may not enter the Rock Island service will have acquired a certain good-will toward the carrier, no matter what their future work may be. In addition to this of course, the interest of the children in the activities of the "Diamond Club" will be reflected to the parents and thus keep alive, at home, a more intense loyalty and feeling of friendliness toward the railway organization.

The clubs so far organized and their memberships are: Trenton, Mo., 205; Estherville, Iowa, 140; Shawnee, Okla., 131; Herington, Kan., 115; El Reno, Okla., 102; Dalhart, Tex., 100; Little Rock, Ark., 83; Booneville, Ark., 72. A few smaller clubs total an additional 60 members. In this connection it is interesting to note that the children in these clubs represent a total of 624 families, divided as follows: enginemen, 77; conductors, 70; firemen, 42; brakemen, 42; switchmen, 22; shopmen, 154; and office and miscellaneous employees, 217.

It is worth while noting that in the exhibition of the handiwork of the children as well as in the musical program, an impetus has been given to the expression of the children's natural talents and the development of their initiative along constructive lines. These demonstrations have been a source of wonder to many and of keen pride to the parents.

To all of the programs of the Diamond Clubs, the parents of the children and the people of the community are invited and they attend to an encouraging degree. These meetings are given prominent mention by the newspapers in the communities where the clubs are organized, and are followed with "write-ups" on the "Diamond Club" pages of the railway's magazine.

Twenty-Five Year Club

The twenty-five year club, which now has more than 2,000 members, was organized on March 1, 1925, by a group of veteran employees in Chicago. Its purpose is to form a closer social relationship, stimulate mutual interest in the welfare of its members and promote a spirit of helpfulness and loyalty to the railroad.

The membership consists of Rock Island employees in active service and who, at the time of their application for membership, have had 25 years or more aggregate service to their credit. Members who are in good standing in the club when they are pensioned by the company are considered life members without the further payment of dues.

The club plan calls for separate chapters on each operating division and each division of the railroad has an active chapter which is self-supporting and in good financial condition. The organization is financed through an original initiation fee of $1 and $1 yearly dues. There are sufficient funds on hand in all chapter treasuries, and in the general treasury to provide overhead, operating and reunion expenses, such as printing, stationery, entertainment features, etc.

Local chapters are expected to hold social gatherings at prominent points, keep track of and visit the sick and in every way possible make their chapter membership most worth while and helpful to all concerned. The clubs have not reached the point of financing any regular sick benefit features, other than numerous small amounts authorized by the chapter executive committees to help the sick. Each year an annual reunion is held at some prominent city, attended by such chapter members as can be spared from their various lines of work.

Rock Island Railway Club

The Rock Island Railway Club was organized as a corporation not for profit on November 30, 1907 and has been continuously in existence since that time. Originally, it was organized as a Chief Clerk's Club and it so remained until about 1918, at which time the by-laws were amended so as to make eligible for active membership all male employees within the Chicago Terminal Division zone and those employed outside of the Chicago Terminal Division zone as non-resident members. Until January, 1920, the meetings of the club were held each month and since that time bi-monthly. Prior to 1920 the annual dues were $12 but in 1920 they were reduced to $10.

The purpose of the club is to promote a closer social relationship among the employees of the railroad. The annual meeting of the club is held on the second Tuesday of March, and at this meeting the officers, consisting of a president, vice-president, secretary, treasurer and five directors, are elected.

The programs of the bi-monthly meetings have been of great variety and have included prominent speakers who have discussed subjects of all descriptions. During the past two years the club has entertained ex-Mayor Dever of Chicago, Hon. Jacob M. Dickinson, former Secretary of War, and former receiver of the road, Col. Albert E. Barns, U. S. A., Hon. W. J. Lindsay, chief justice of the Superior Court of Cook County, and representatives of the Alaskan railroad. Outings have been held during the summer and have included golf, indoor base ball, horseshoe pitching, etc. In addition to these activities the members participated actively in a "Get the business" campaign until this pro-

gram was assumed by the department of personnel and public relations.

Credit Unions

The management, operation and control of the credit union is in the hands of persons in the group who are members of and who have money invested in it. The credit unions inspire thrift by affording safe investment for small amounts of money at an attractive rate of interest. They relieve the need for credit among members of the group by making loans to members for provident purposes at reasonable rates of interest.

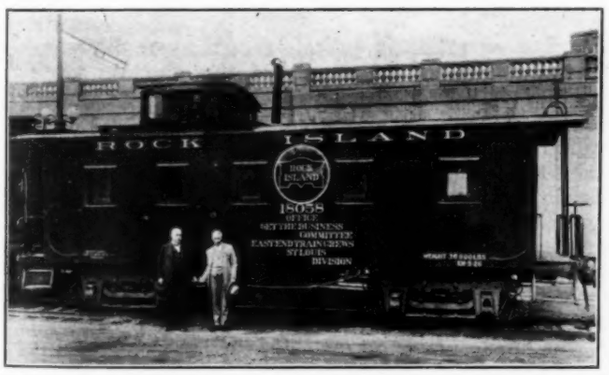
There are 17 credit unions in operation on the Rock Island lines as follows:

Chicago Local Freight	Silvis, Ill.
Englewood General Office and Station	Cedar Rapids, Iowa.
Hamilton Park General Office	Valley Junction, Iowa.
South Chicago	Inver Grove, Minn.
47th St. Shops, Chicago	Eldon, Iowa.
124th St. Shops, Blue Island, Ill.	St. Joseph, Mo.
Joliet, Ill.	Kansas City, Mo.
Peoria, Ill.	St. Louis, Mo.
	Memphis, Tenn.

There is no gainsaying that an employee who must divide his attention between the work he is doing and worry about his bills cannot render maximum results. Many accidents to employees and to others can be traced with considerable directness to the neglect or oversight of an employee who didn't think because his mind was occupied with worry over his finances. Credit unions, by doing much to relieve the cause of much of this worry, accomplish considerable for the railroad and for the employees as well, and incidentally improve the employee's credit standing in his home community.

Rock Island Country Clubs

Two country clubs have been organized, one at Chicago and the other at Fort Worth, Tex. The Rock Island Country Club is an organization of about 100 members, all of whom are employees of the Rock Island Lines in the vicinity of Chicago. The club occupies buildings and a tract of ground leased from the railroad. Its expenses are met with monthly dues of $2. It provides a nine-hole golf course and a clubhouse, which were designed and constructed by members of the club. The clubhouse and grounds were built by the members. The Fort Worth Rock Island Employees Club building is located on Lake Worth and was built by employees on Saturday afternoons, Sundays and holidays in 1922. The ground, on which an $8,000 house is situated, is leased from the city. The monthly dues for resident members are $3 and for non-resident members $1.



Conductor at Eldon, Mo., Uses Caboose for "Get the Business" Office

Six brass bands have been organized on the Rock Island Lines, at Blue Island, Ill., Silvis, Ill., Cedar Rapids, Iowa, Trenton, Mo., Horton, Kan., and Shawnee, Okla. These bands range in size from 25 to 40 pieces and are composed entirely of employees (mostly shopmen) in these communities. The bands are all self-sustaining, the members paying dues into the band fund from which music and instruction are purchased. The instruments belong individually to the band members. While some of these bands are of rather recent origin, some are four or five years old, and one band has been organized for about 12 years. The bands engage in rather diverse activities. All respond to invitations from local groups and clubs of employees, and some bands even go to the extent of giving concerts in neighboring communities. Employees benefit from the organizations of these bands by having them in attendance at various functions given by the employees as a whole. The benefits to the railway from the band organizations take the form of improved enthusiasm and loyalty resulting from the closer affiliation among the members of the bands and between the band members and employees in other departments who are given the benefits of the band's labors.

Silvis, Ill., Shop Band

There are 13 athletic clubs on the Rock Island Lines, one on each operating division. The objects of these athletic clubs are to encourage interest and participation in athletics; to promote friendly rivalry among employees; to inspire a desire for physical fitness; to develop sportsmanship and the ability to win or lose gracefully; and to have athletes from each division engage in a system-wide contest annually.

Get-The-Business Committees

In 1921 a "get the business" campaign was established and committees were appointed on each division to direct the work of other employees. On the St. Louis-Kansas City division a caboose is used as an office for the chairman and vice-chairman of the committee, the chairman being the regular freight conductor on this run, who keeps in constant touch with the shippers along his line, not only for new business, but also by his personal attention helping to keep the regular patrons satisfied regarding the service. The work of this conductor and his division committee is volun-

tary, like that of committees of employees on all of the divisions. The business secured by these voluntary employee committees during a year aggregates approximately 5,000 cars of freight and 4,500 passengers.

For a number of years a pension plan, which accords to the employee of long service a contribution to his future support on retirement, has been administered by the board of pensions, of which the head of the department of personnel and public relations is a member. In addition to this, a contributory group insurance program, of which any employee with six months service is eligible, providing for death and accident benefits, as well as weekly indemnity in the case of illness, has been inaugurated and accepted by a very large proportion of the employees. The administration of the group insurance program is one of the functions of the department of personnel and public relations.

Automatic Interlocker Saves Great Northern $5,000 a Year

NINE months' operation of an automatic interlocking plant at Hutchinson Line Junction, Wayzata, Minn., on the Great Northern, has shown a saving at the rate of $5,000 per year, as compared to the cost of operating and maintaining the manually-operated interlocker which was replaced. The installation protects a junction of a single-track branch line with a double-track main line and includes, in addition to the junction switch, a crossover between the main tracks.

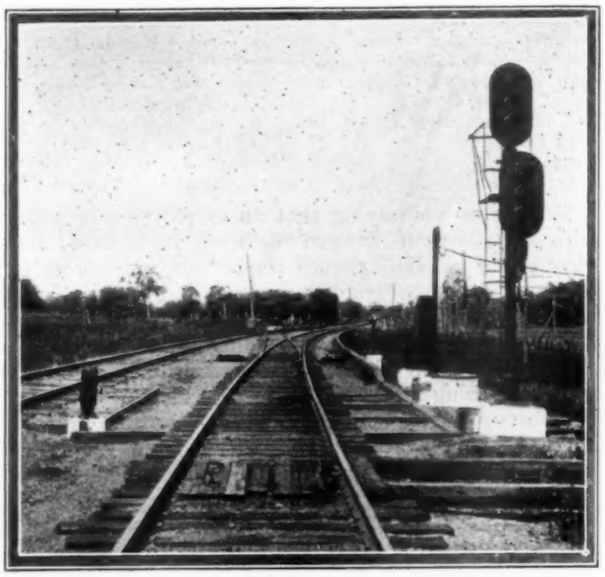
It was possible to use automatic control for all regular train movements with the exception of those going from the double-track line to the branch line. Such movements are provided for by a push button installed at the Wayzata station, approximately 4,000 ft. from the branch line connection. All branch-line trains stop at this station, and when their station work is completed and they are ready to proceed, the operation of the push button sets up the desired route, providing no conflicting route is in use. A main-line train approaching the interlocking plant over the same approach circuit as that used by the branch-line train will automatically set up the route for the main line movement.

Provision is made, by means of five clockwork releases located near the center of the plant, for local control of the five possible routes. This permits the free use of the plant for switching purposes. Instructions for operating these time releases are given by a miniature manipulation chart located in the space usually occupied by the terminal board in the standard four-way relay box which houses the five time releases. All other instructions required for the operation of the plant are framed on the inside cover of the release box door.

Dual-Control Selectors Provide Flexibility

In addition to the clockwork releases and automatic operation, each of the three switches is equipped with a dual-control selector in order to make the operation of the plant as flexible as possible. These switches become available for hand-throw operation by setting the selector lever in the "hand-throw" position.

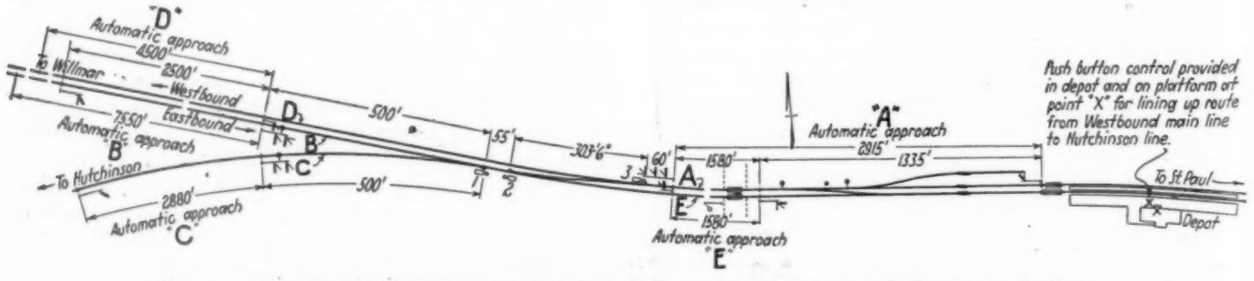
Smashboards are used on the home signal masts on the branch line and on the eastbound main line, with which the branch line connects. Control of these smashboards is effected directly by the junction switch, in order to reduce as far as possible, the necessity for handling the smashboards by hand. That is, unless



Westbound Home Signal at Wayzata Automatic Interlocker

electrical operation is entirely disarranged, the smashboards follow the movement of the junction switch, whether the switch is handled electrically or manually. At the same time, in normal operation, the junction switch will not move away from either position, until the smashboard governing train movements over the switch in this position has been set at "stop." The smashboards are of the top-post mechanism type with the spectacle mounted directly on the mechanism spindle. Cranking, when necessary, must be done through the small opening in the back of the mechanism case.

The home signals, inclusive of the back-up dwarf signals, are of the color-light type. Model-5 switch machines are used, with the improved motor equipped with a magnetic brake. The power supply throughout is storage battery, trickle charged by rectifiers, 4 cells being used on signals and 10 cells on switches.



Track and Signal Plan of Automatic Interlocker Controlling Junction and Crossover Switches

Louisville & Nashville Prospers

Improved roadway and additional tracks increase efficiency in handling heavier traffic

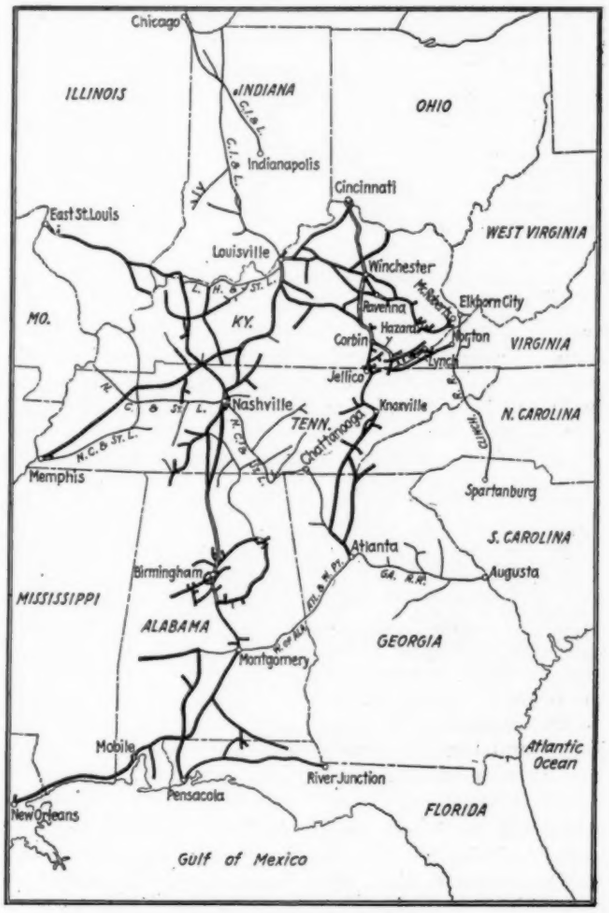
THE Louisville & Nashville policy during the past few years has been one of improving its property to handle its increasing traffic more expeditiously and economically. On February 10 of the current year double track operation began between the coal region at Harlan, Ky., and Covington on the Ohio river, 255 miles (see *Railway Age*, June 30, page 1495). Elsewhere also there has been additional track work and a heavy program of bridge renewal has been pursued for several years.

The road's net income, as shown in Table 1, increased from $10,598,019 in 1922 to $19,422,111 in 1926. There was, however, a recession to $16,726,241 in 1927. Traffic, measured in both tons and ton-miles, has increased steadily, the ton figure growing from 51,622,181 in 1924 to 63,898,695 in 1927. This last, incidentally is slightly higher than the 1926 figure in spite of the decline in earnings. Operating revenues were $147,136,530 in 1926 and $144,605,117 in 1927. Operating expenses were $112,462,391 and $112,857,834 respectively. The decline in net operating revenues from $34,674,140 in 1926 to $31,747,282 in 1927 and a similar decline in net income is ascribable in large part to a falling average revenue per ton-mile (0.878 cents in 1926 and 0.866 cents in 1927).

Coal Tonnage up 40 Per Cent in Four Years

The Louisville & Nashville is a coal road and its producing region has prospered. L. & N. bituminous coal tonnage in 1924 was 27,714,343 and in 1927 it had grown to 38,552,318—or 40 per cent. This tonnage in 1927 represented 60.3 per cent of the road's total, and all products of mines accounted for 73.6 per cent. Tonnages of important commodities from 1924 to 1927 are shown in Table 3. It will be noted that, while coal has shown the most spectacular increase, nevertheless there has been a steady, healthy growth in other classifications also—notably fresh vegetables, building materials and manufactured goods, the last two undoubtedly reflecting the general economic advance of the L. & N.'s territory.

In Table 2 is shown a comparison of freight operating statistics for the years 1924 and 1927. The general improvement—typified by an increase of 20.6 per cent in gross ton-mileage handled by an increase of but 1.9 per cent in freight train miles—shows the efficacy of the company's recent rather heavy capital expenditures in improving its operating efficiency. Gross tons per train were increased 18.4 per cent, train speed 4.4 per cent and gross ton-miles per train-hour 23 per cent; fuel efficiency increased 11.8 per cent.



The Louisville & Nashville

Table I—Louisville & Nashville Operating Results, Selected Items, 1921 to 1927

	1921	1922	1923	1924	1925	1926	1927
Average mileage operated	5,042	5,039	5,040	5,044	5,042	5,038	5,069
Total operating revenues	$117,485,777	$121,138,840	$136,375,673	$135,505,677	$142,244,307	$147,136,530	$144,605,117
Total operating expenses	107,408,938	96,604,496	109,865,090	107,126,897	108,402,256	112,462,391	112,857,834
Net operating revenues	10,076,838	21,534,344	26,510,583	23,378,780	33,842,051	34,674,140	31,747,282
Railway tax accruals	3,494,351	4,710,724	6,372,310	6,189,994	7,049,363	7,927,642	7,639,855
Railway operating income	6,562,146	16,810,396	19,946,272	22,154,034	26,760,119	26,722,760	24,087,731
Hire of freight cars, Cr., bal.	Dr. 405,324	1,274,827	1,000,666	588,017	662,069	994,519	361,183
Dividend income	1,424,997	1,135,065	1,135,142	1,292,652	1,422,271	1,837,718	1,550,884
Total non-operating income	3,337,982	4,546,371	4,505,362	4,136,255	4,418,342	5,386,581	5,046,714
Gross income	9,900,128	21,356,767	24,451,635	26,290,289	31,178,461	32,109,541	29,134,445
Interest on funded debt	8,532,692	9,535,835	9,746,846	10,792,167	11,155,143	11,023,086	10,893,095
Total deductions from gross income	10,237,090	10,758,748	10,952,700	12,157,495	12,477,750	12,687,230	12,408,204
Net income	Def. 336,962	10,598,019	13,498,935	14,132,794	18,700,711	19,422,111	16,726,241
Dividends	5,040,000	5,040,000	5,950,000*	7,020,000	7,020,000	8,190,000	8,190,000
Earnings, per share	None	$14.57	$11.35	$11.98	$15.98	$16.60	$14.30
Revenue ton-miles (thousands)	8,236,443	9,090,687	10,578,359	11,206,385	12,506,101	13,292,521	13,442,475
Revenue passenger-miles (thousands)	685,590	669,329	767,475	710 720	681,177	663,190	608 071
Revenue per ton per mile, cents	1.063	.998	.962	.920	.889	**0.878**	**0.866**
Transportation ratio	42.36	38.74	37.38	36.54	34.55	34.43	34.94
Operating ratio	91.42	82.22	80.56	79.06	76.21	76.43	78.05

* Does not include stock dividend of 62½ per cent, $45,000,000, payable May 7, 1923.

The nature of these additions and betterments during the past four years is outlined in Table 4. Improved roadway i.e., additional double-tracking, improved grades and stronger bridges, ranks high in the L. & N.'s betterment program. As has been noted, a double track line from the coal regions at Harlan, Ky., to the Ohio river at Covington has recently been placed in operation. Among other important improvements of this character are the following: Two large new bridges on the line to New Orleans at Rigolets and Chef Menteur; additional yard and engine facilities at Gentilly, La.; shop facilities at Corbin, Ky., and Etowah, Tenn.; bridge reconstruction from Louisville to Nashville; a new bridge between Newport, Ky., and Latonia; reconstruction of the bridge over the Tennessee river at Knoxville; a new bridge over the Tensas river in Alabama; and several other improvements at strategic points. The road at the end of 1927 had 1,239 miles of its line automatically signaled, a total which at the end of 1924 was 921, in 1925 was 1,093 and in 1926 was 1,173.

Additions to equipment have also been important but, since 1924, have been far subordinate to the expenditures made on the roadway, as the details in Table 4 show. In 1925, 1926 and 1927 the road purchased 66 Mikado freight locomotives of 60,000 and 63,000 lb. tractive force. In the three years, also, it purchased 6,970 freight train cars, 17 heavy passenger locomotives and 109 passenger train cars.

Table II—Louisville & Nashville, Comparison of Selected Freight Operating Statistics

	1927	1924	Per cent of change Inc.	Dec.
Mileage operated	5,048	5,026	0.4	
Gross ton-miles (thousands)	30,204,859	25,042,366	20.6	
Net ton-miles (thousands)	14,510,225	12,085,826	20.1	
Freight train-miles (thousands)	20,977	20,594	1.9	
Freight locomotive-miles (thousands)	22,585	22,753		0.7
Freight car-miles (thousands)	735,875	616,993	19.3	
Freight train-hours	1,783,339	1,818,145		1.9
Tons of coal consumed by freight locos.	2,580,617	2,443,613	5.6	
Car-miles per day	32.1	27.7	15.9	
Net tons per loaded car	33.3	31.5	5.7	
Per cent loaded to total car-miles	59.2	62.2		4.8
Net ton-miles per car day	633	543	16.6	
Freight cars per train	36.1	30.9	16.8	
Gross tons per train	1,440	1,216	18.4	
Net tons per train	692	587	17.9	
Train speed, miles per train-hour	11.8	11.3	4.4	
Gross ton-miles per train-hour	16,937	13,774	23.0	
Net ton-miles per train-hour	8,137	6,647	22.4	
Lb. coal per 1,000 gross ton-miles	150	170		11.8
Loco. miles per loco. day	85.3	86.6		1.5
Per cent freight locos. unserviceable	15.0	14.8	1.4	
Per cent freight cars unserviceable	9.6	9.9		3.0

Uniform Maintenance Policy

From a standpoint of maintenance, both of way and equipment, the company's policy has been uniform. In 1927 maintenance of way expenditures totaled $22,147,439, being 15.32 per cent of operating revenues. In the three preceding years this ratio was: 1924, 14.61; 1925, 14.29; 1926, 14.76. The maintenance of equipment ratio from 1924 to 1927 varied in order, as follows: 23.42, 22.60, 22.45 and 22.44, the actual expense in 1927 being $32,443,885. While these ratios have been rather uniform, the transportation ratio (Table 1) has shown a progressive decline from above 42 in 1921 to less than 35 in the past three years.

Of the road's operated mileage of 5,069, 1,398 miles of line have rails of 100 lb. section and 1,866 of 90 lb.

The Louisville & Nashville in 1927 raised its dividend from a 6 per cent to a 7 per cent basis. As shown in Table 1, its 1927 net income, after charges, was almost double the dividend requirements, resulting in an increase in the balance credited to profit and loss from $71,336,122 at the end of 1926 to $80,341,468 at the end of 1927.

The first five months of 1928 show some declines in traffic and earnings for the Louisville & Nashville as compared with the same period last year. Operating revenues declined by $3,802,688. However, operating expenses were reduced by $2,696,729 and net railway operating income showed a decrease of but $902,798. Passenger traffic has been declining steadily since 1923, when passenger train earnings totaled $31,835,823. In 1927 they had fallen to $25,326,173. For the first five months of 1928 there has been a further decline of 14 per cent from the same period last year.

There was no new financing in 1927. Outstanding debt was reduced $2,262,915—largely by the redemption of equipment trusts. In April of the current year the company was authorized to authenticate and deliver to its treasury $49,503,000 of first and refunding bonds series C, to reimburse itself for additions and betterments.

Table III—Louisville & Nashville, Tons of Revenue Freight Carried

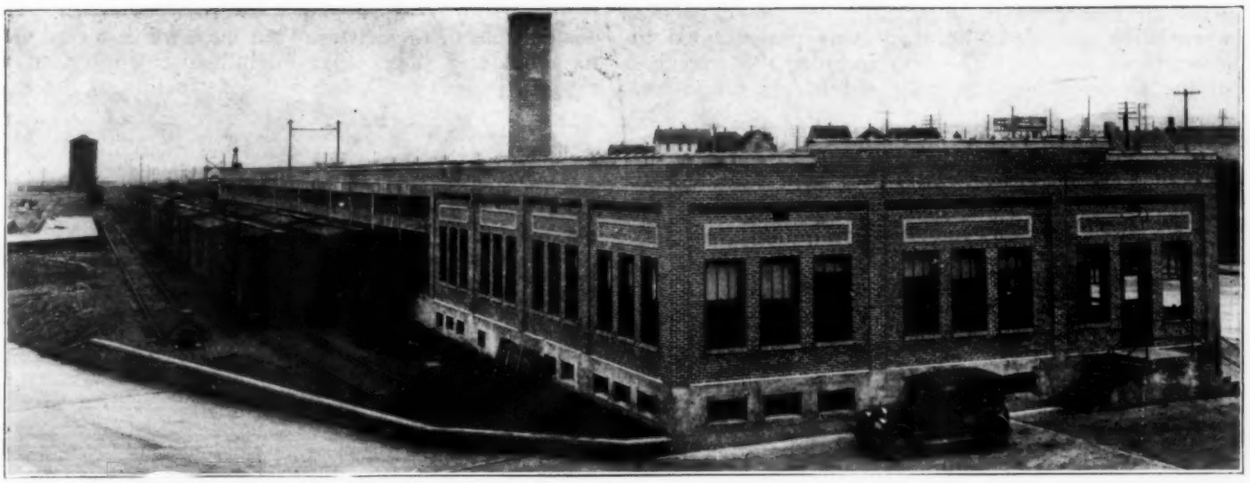
	1924	1925	1926	1927	Per cent of Total Tonnage 1927
Cotton	125,009	170,564	196,233	186,360	...
Other Fresh Fruits	293,729	322,203	363,816	332,340	...
Other Fresh Vegetables	110,068	114,080	121,536	124,997	...
Total, Products of Agriculture	2,995,838	2,999,659	3,009,816	2,797,166	4.4
Total, Products of Animals	527,148	500,593	497,128	544,698	0.8
Bituminous Coal	27,714,343	32,885,359	37,692,966	38,552,318	60.3
Iron Ore	2,514,915	2,685,118	2,825,842	2,383,166	...
Clay, Gravel, Sand and Stone	3,379,716	3,638,376	3,805,275	4,011,245	...
Total, Products of Mines	35,695,528	41,485,352	46,701,478	47,044,793	73.6
Total, Products of Forests	4,188,695	3,962,549	3,870,298	4,025,605	6.3
Bar and Sheet Iron, Structural Iron, etc.	652,256	737,832	706,569	697,478	...
Cement	612,549	636,405	611,777	650,292	...
Brick and Artificial Stone	429,408	506,648	553,541	518,388	...
Other Manufacturing and Miscellaneous	1,329,856	1,601,644	1,698,571	2,187,702	...
Total Manufacturing and Miscellaneous	6,630,719	7,603,678	7,712,215	7,964,451	12.5
L. C. L.	1,584,253	1,525,086	1,547,243	1,521,982	2.4
Total All Freight	51,622,181	58,076,917	63,338,178	63,898,695	100.0

Table IV—Louisville & Nashville, Additions and Betterments, Road, 1924-27

	Grading	Bridges	Ties	Rails	Other Track Material	Ballast	Shops and Enginehouses	Signals and Interlockers	Total
1924	1,668,825	1,969,689	348,775	690,841	1,001,618	253,169	308,308	708,753	10,332,920
1925	1,212,552	1,857,174	280,975	729,776	927,866	195,661	356,081	600,799	7,679,583
1926	1,597,750	1,548,997	318,023	1,751,736	1,058,143	326,969	187,109	533,005	8,953,610
1927	1,294,333	1,643,538	321,715	729,262	977,055	308,481	219,409	196,703	7,832,457

Additions and Betterments, Equipment, 1924-27

	Locomotives	Freight Train Cars	Passenger Train Cars	Work Equipment	Total	Net Increase after Credit for retirements
1924	2,165,539	10,853,006	1,454,692	336,951	14,812,202	13,383,096
1925	1,881,826	3,884,853	581,221	49,854	6,399,472	4,640,980
1926	3,007,149	5,392,215	1,746,229	95,792	10,242,379	7,804,931
1927	1,184,298	2,804,279	814,722	259,229	5,062,527	2,356,079



View of Office Building and Inbound Freight House

Northern Pacific Remodels Freight Facilities at Spokane, Wash.

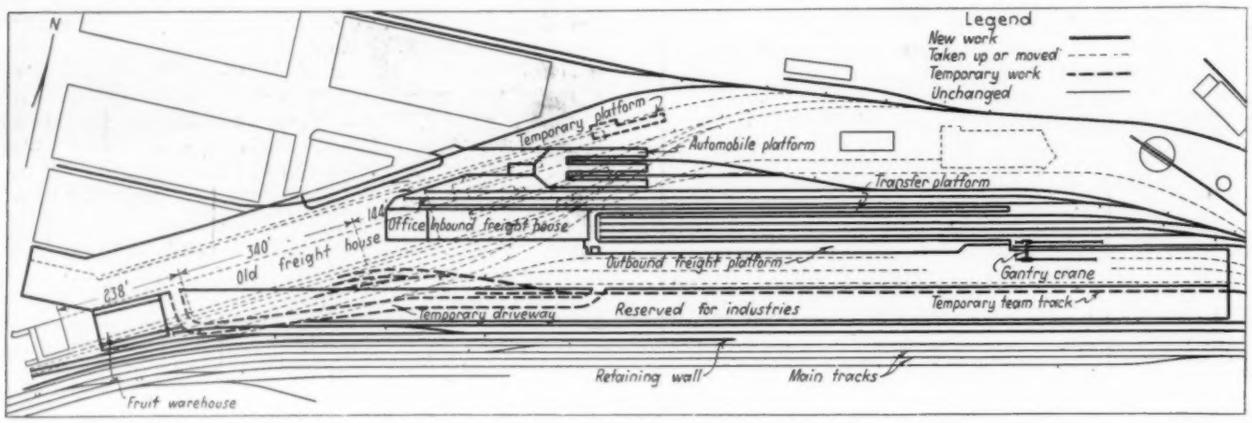
Careful planning permits erection of new freighthouse and rearrangement of tracks with little interruption to service

IN the replacement, during the past year, of its old freighthouse at Spokane, Wash., with a new structure and auxiliary facilities on the same general site, but involving a complete rearrangement, the Northern Pacific, by careful planning, was able to carry on the work with a minimum of interference with business during the time of construction. The new facilities include a brick and concrete inbound freighthouse, 60 ft. wide by 300 ft. long, with an adjoining one-story office building, 60 ft. by 80 ft., of similar construction; a covered outbound freight platform, 24 ft. wide by 660 ft. long, of wood construction; an automobile platform and a gantry crane, together with the necessary tracks, driveways, and water and sewer connections. Since shipments of l.c.l. freight for stations beyond Spokane are received in carload lots from gateway points, an open transfer platform, 10 ft. wide by 770 ft. long, was constructed between the tracks serving the inbound and the outbound freight houses.

An interesting feature of the layout of these facilities is the provision for the location of industries, such as small manufacturing plants, commission houses, jobbing concerns, etc., which forward or receive shipments in both carload and less than carload lots. For this purpose a strip of land, 60 ft. by 2,000 ft., has been reserved along the southerly side of the property, a track on the south side of the industry sites permitting the placing of cars, while another track, immediately to the south, is provided for switching. The north side of the strip is served by the concrete paving which also serves the freight houses and this arrangement, permitting the direct handling of carload freight, with convenient access to the freight houses for l.c.l. freight, offers many advantages for certain classes of business. A two-story-and-basement fruit warehouse, 60 ft. by 130 ft., of brick and concrete construction, was built at the westerly end of this area at the time the new freight houses were constructed and several additional industries have been located on this strip since the new facilities were put in service.

Space Reserved for Industries is in the Right of the Driveway

In order to keep the old facilities in operation to as great an extent as possible while the new facilities were being provided, the work was programmed to cover three periods. The first included the wrecking of the westerly 248 ft. of the old freight house and



Layout of New Freight Facilities at Spokane

the tracks serving that portion to permit the erection of the fruit warehouse, the office building for the freight house being left in service, since its location did not interfere with the work. During this period the outbound freight house and the transfer platform were constructed, together with the paving adjacent to the former and the tracks serving the two platforms. At the same time an 810-ft. extension was made to the retaining wall along the main tracks, which are elevated through the city, and some work was done on a retaining wall and pavement along the property line on the northwesterly side of the property. A temporary driveway was also provided to connect the paving at the old freight house with that at the new outbound freight house to permit that building to be placed in service so that further removal of the old freight house could proceed. In the second period the easterly 144 ft. of the old freight house and adjoining platforms were removed to permit the construction of the new inbound freight house and office building, as well as the automobile platform and the tracks and driveways serving these facilities. During this period the remaining portion of the old freight house, 340 ft. long, was kept in service by providing temporary track connections from a track to the east. The third period was devoted to the removal of the remaining portion of the old freight house and tracks and the completion of such paving and track work as could not be done until that time.

As will be noted from the accompanying plan of the layout the various facilities have been located to utilize the property economically and to secure the maximum service from the tracks serving the freight houses and platforms. The automobile platform has a capacity of six cars at one setting and these can be unloaded from either side. If desired, four additional cars can be set to the platform on a track adjacent to its southerly side, but these cars can be unloaded from the one side only.

A concrete driveway extends the full length of the industrial sites and the freight house platform, connecting with several of the main thoroughfares to the business portion of the city. This driveway has a minimum width of 65 ft., providing ample room for the movement of trucks, and this, with the various points of egress and ingress, has eliminated congestion. Owing to the difference in elevation of the various points where the driveway connects with the streets, intersecting grades and warped surfaces were necessary in various portions of the driveway but these were worked out to avoid any slopes that might cause trouble on a slippery pavement. Design and construction of the terminal was carried out under the direction of H. E. Stevens, chief engineer of the Northern Pacific.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended July 7 amounted to 850,605 cars, a decrease of 152,444 cars from the preceding week due to the observance of the July 4 holiday. The total represented an increase of 11,520 cars as compared with loading in the corresponding week of last year and a decrease of 46,961 cars as compared with 1926. Loading of grain and grain products, less-than-carload merchandise and miscellaneous freight was larger than a year ago. Coal loading, with a total of 115,010 cars, was 158 cars lower than in the corresponding week of last year. Loading in the Eastern, Central Western and Southwestern districts showed increases as compared with a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, July 7, 1928

Districts	1928	1927	1926
Eastern	192,411	186,337	205,053
Allegheny	172,379	173,194	182,185
Pocahontas	44,204	46,473	48,905
Southern	118,850	126,051	130,561
Northwestern	126,293	129,414	135,164
Central Western	125,250	116,083	127,052
Southwestern	71,218	61,533	68,636
Total West. Dists.	322,761	307,030	330,852
Total All Roads	850,605	839,085	897,556
Commodities			
Grain and Grain Products	43,218	36,273	42,697
Live Stock	20,466	23,141	25,819
Coal	115,010	115,168	147,558
Coke	9,058	9,567	10,873
Forest Products	47,686	48,864	52,097
Ore	57,009	57,163	65,150
Mdse. L. C. L.	221,565	220,413	223,576
Miscellaneous	336,593	328,496	329,786
July 7	850,605	839,085	897,556
June 30	1,003,049	1,021,438	1,065,641
June 23	986,789	1,018,060	1,055,362
June 16	1,003,292	1,016,479	1,036,643
June 9	995,960	1,028,367	1,052,471
Cumulative total, 27 weeks	25,307,710	26,360,125	26,230,788

The freight car surplus averaged 332,317 during the period ended July 8, as compared with 336,181 cars on June 30. The total included 164,713 box cars, 116,521 coal cars, 25,284 stock cars and 16,505 refrigerator cars.

How the Santa Fe Handles Oil for Locomotive Fuel

Facilities are designed for economical operation and include reclamation of oil from engine pit drainage

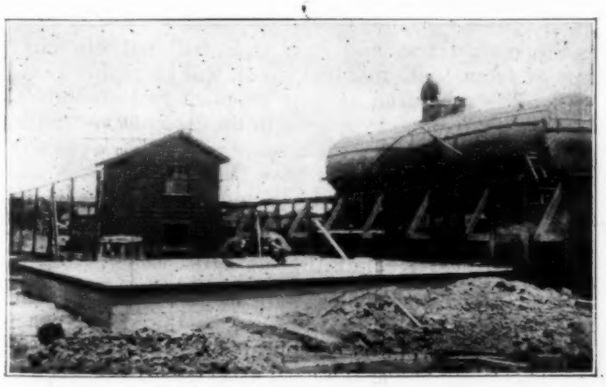
THE Atchison, Topeka & Santa Fe, which, for a number of years, has used oil extensively as locomotive fuel on its Coast Lines, has evolved methods of handling and storing the oil which effect economies in handling, protection from the fire hazard and the reclamation of oil from the drainage from enginehouse pits. Apart from the value of the oil recovered, the latter operation has simplified the disposal of enginehouse wastes and has relieved the road of damage claims arising from the oily sludge finding its way to privately owned land.

All Santa Fe locomotives operating west of Winslow, Ariz., burn oil, and limited supplies are available between Winslow and Gallup, N. M., although most of the locomotives operating between Winslow and Albuquerque, N. M., burn coal. The oil used is the residuum from the various refining and cracking processes employed in the manufacture of gasoline, and is produced in the California fields, making necessary its transportation in tank cars for distances up to 533 miles.

The fuel stations are from 23 to 91 miles apart, depending on the grades and the location of the terminals. Passenger locomotives run from 180 to 218 miles between fuel stations, while freight locomotives take oil at more frequent intervals.

Unloading and Rehandling

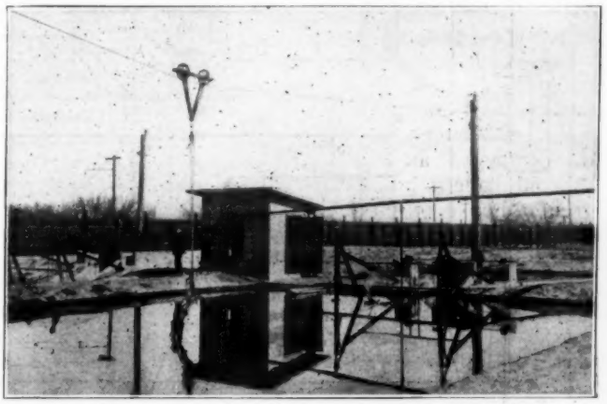
At the fuel stations, the usual method of unloading oil is to spot from five to ten cars at a time over a steel unloading trough provided with steel covers which are closed when the trough is not in use and are also closed when the cars are unloading oil, except for a short section at the car spout. Several cars discharge at one time; under average conditions, a 10,500 gal. car can be unloaded in from 30 to 45 minutes, while the number of cars which can be unloaded at once depends on the capacity of the rehandling pump.



Unloading Oil Into Underground Storage Tank

Settling Basins at Riverbank, Cal.

The oil flows from the steel trough to an underground steel tank, usually 10 ft. in diameter by 34 ft. long, holding 20,000 gal. A large inlet pipe, from 12 in. to 16 in. in diameter, is used to prevent the oil from backing up in the trough. A coarse bar screen is provided for the inlet to this pipe and on the outlet, inside the tank, an oil seal is constructed to prevent the escape of gas from the tank. Steam heating coils are provided for the rehandling tank and, in some cases, for the trough. The tank cars have heating coils so that the oil may be heated during cold weather before it is discharged from the cars.



Oil Skimming and Sludge Settling Basin, with Steam Siphon, at Needles, Cal.

In the typical fuel station, the oil is drawn from the underground rehandling tank by means of rotary pumps driven by electric motors or vertical steam engines of the self-oiling automatic type. These pumping units have capacities ranging from 300 gal. to 500 gal. per min., and are installed in duplicate to give maximum discharge rates up to 1,000 gal. per min. In the older plants, direct-acting steam pumps are still used, but the tendency is to replace these with the more efficient rotary units.

Fireproof concrete pumphouses are provided for the more important plants. These not only protect the machinery better than cheaper buildings, but also insure better care, as the men will keep up the machinery and take more pride in it when it is housed neatly and the floors and walls have to be kept clean.

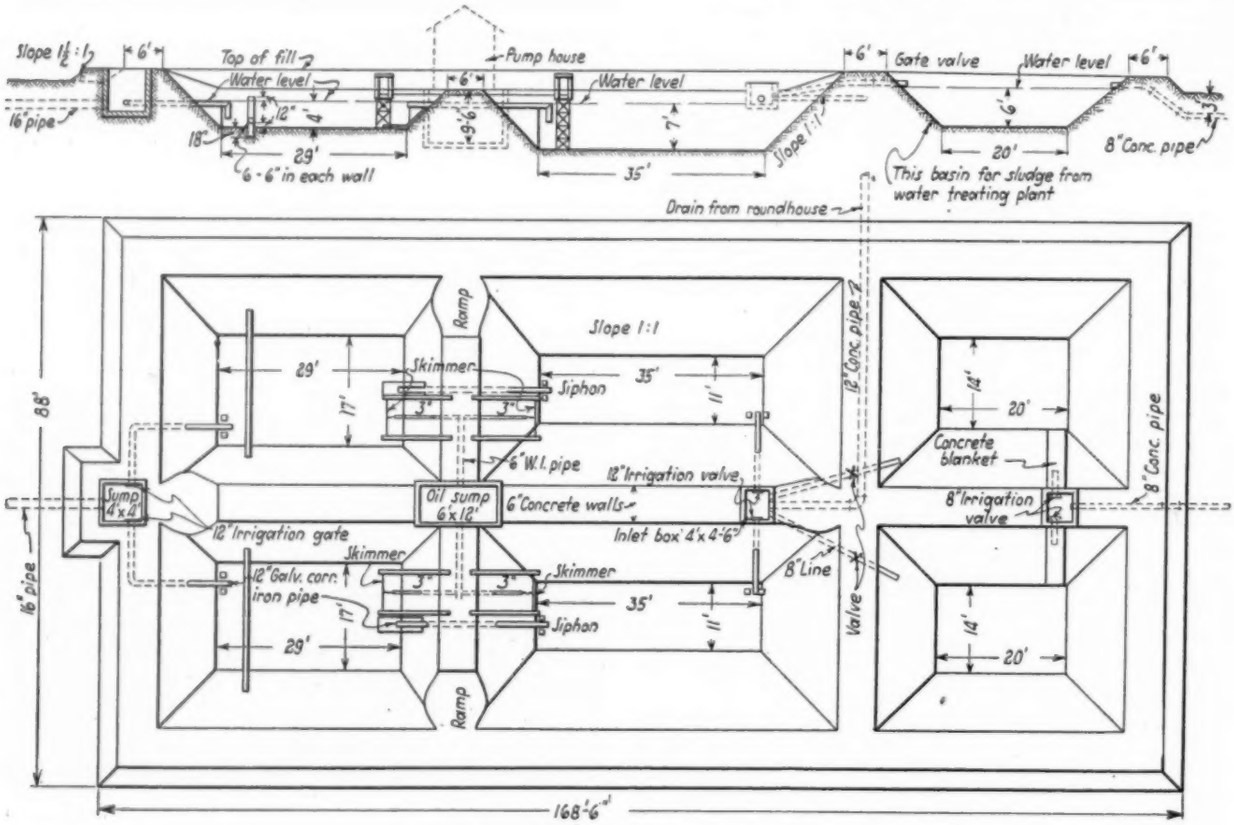
A steel pipe line (preferably welded), leads from the pumps to the storage tanks. In some cases, steam supply lines are carried close to the discharge pipe to warm the oil, while in others the return line from the tank heating coil is carried inside the oil discharge line.

Oil Storage

At most points, 55,000-bbl. steel tanks, 114 ft. in diameter by 30 ft. high with wooden roofs are used for storage. While none of these have ever caught fire, there has been some trouble with the roofs blowing off, while the built-up roofing sometimes allows water to get into the oil. In recent years the fire risk from wooden roofs has been considered more seriously so that two tanks, which are to be erected in the near future, will be provided with steel floating roofs to provide maximum fire protection.

34 ft. long, elevated 20 ft. on wood bents, but in the latest plants, vertical conical-bottom steel tanks of from 20,000 to 30,000 gal. capacity, supported on steel towers, are being used to minimize fire risk. Thermostatically-controlled heating coils are provided for the delivery tanks.

Oil is supplied to locomotives through separate oil columns, usually of the double track pattern, with telescopic spout and a drain for the oil drip from the spout. They have 8-in. vertical and 6-in. horizontal pipes with a valve on the extreme end of the horizontal run. The discharge rate from such columns varies from 400 to 800 g.p.m., depending on the head available and on the temperature and viscosity of the oil. In one new installation to be made this year, a 12-in. column with a 10-in. horizontal pipe will be used to shorten the time required to fuel locomotives stopping



Plan and Section of Settling Basins

Some improvement over past practice has been made in the heating of oil in the storage tanks. Formerly box coils made up of pipe and fittings were used, but these are being replaced by 2-in. welded coils about 10 ft. in diameter and 25 pipes high, headers being provided for the equal distribution of steam and a trap for the rapid removal of condensation.

The use of floating roofs will make necessary a special design of heating coils to suit the lower clearance available. Also, where floating roofs are used, a girder must be provided around the top of the tank to prevent damage from wind pressure.

Delivery Tanks and Standpipes

From the storage tanks oil either flows by gravity or is pumped to an oil delivery tank. In most of the plants this consists of a steel tank 10 ft. in diameter by

on the main track, and it is expected that discharge rates of from 1,500 to 2,000 g.p.m. will be realized.

All oil is measured as it is supplied to locomotives. Usually this is done by gaging in the locomotive tender, although at some of the main terminals six-inch positive displacement rotary meters have been used successfully for many years. Experiments with other types of oil meters are being made.

Reclaiming of Oil

At all engine terminals where oil is used in locomotives the problem of the disposal of the waste water from the engine pits is complicated by the presence of oil. This often assumes a legal aspect, as the depositing of oil on land or crops is a frequent cause of damage suits, and the origin of the trouble can be only too easily traced. Furthermore, the oil is of considerable value,

when reclaimed, and the fire risk, which occurs when oil is not properly confined, is much reduced.

For these reasons the Santa Fe began to construct large earthen or concrete basins 15 years ago into which the roundhouse waste water was discharged, where the boiler-washing solids were allowed to settle and the oil was trapped or skimmed off. The earlier basins were 90 ft. square, three in series on each side, making six basins for one installation. The water was siphoned from basin to basin, most of the oil and sludge remaining in the first basin, although traces of oil appeared in the second, while the third basin would be clean of both oil and sludge. In one case, after thorough chlorination, the final effluent has been returned to water-bearing gravels for many years through drilled wells into which the water is forced by a centrifugal pump. Later installations have been made smaller, as it was found that the large ones were unnecessary.

The oil is skimmed off into a concrete sump, from which it is rehandled by a rotary pump into the main storage tank. The quantities thus rehandled are more than sufficient to justify the installation of the settling and skimming basin. For cleaning boilerwashing sludge out of the basins a steam siphon has been found effective, but even better results have been obtained with rotary pumps made up in sets of two—one to pump the sludge and the other to supply water from another basin to keep the sludge fluid enough to be handled by the first pump, a single motor being used to operate the two pumps through clutch connections.

The design and construction of oil storage plants for locomotive use and for the rehandling and reclaiming of oil is in charge of G. L. Davenport, Jr., assistant engineer, under R. B. Ball, chief engineer, Coast Lines, and under the general supervision of W. K. Etter, general manager.

C. & N. W. Demonstrates Value of Physical Examinations

Medical department finds many train service employees in need of attention

DURING 1927, the medical department of the Chicago & North Western conducted a thorough physical examination of every employee in its train, engine and yard service, 9,633 in all. The dining and parlor car employees, who were also examined, brought the total to about 10,000. The results obtained were most interesting and show, beyond a doubt, the necessity of periodic physical examinations of these employees. One young man was found, for example, with a blood pressure of over 300, a condition which threatened sudden death at any time. He was removed from the service and a few months later dropped dead on the street. Others were found to be suffering from cataracts or other diseases of the eye, which materially affected their vision, etc.

Of the 9,633 men examined, 1,988 or 20.47 per cent, were found to have defective vision, ranging from cataracts to slight astigmatism. Most of these visual defects were slight and it was possible to correct them by proper glasses or operation. As can readily be imagined, however, these defects might easily have been the cause of serious accidents if permitted to continue and grow worse.

Many Minor Defects Found

Bad teeth were found to be unusually prevalent, 2,122 employees, or 21.84 per cent, having pyorrhea or carious teeth. As is well known, infections in the mouth such as sore gums, decayed teeth, etc., are the cause of numerous diseases and have much to do with abnormal blood pressure and other diseases. The employees suffering from these defects were given advice by the examining physicians as to how to correct them and, in most cases, they have had the dental and other treatment necessary to relieve the toxic conditions and reduce the chances for other infections.

High blood pressure was found in 841 employees, or 8.66 per cent; 398 employees or 3.89 per cent, were found to be suffering from various types of heart disease; while 110, or 1.13 per cent had diabetes in varying degrees. In all of these cases, as in other cases where conditions existed that could be remedied, the employees were given advise by the examining physicians. Many of the cases, where the disease was incipient, have been cured by proper attention.

In general the physical well-being of the men examined was found to average well, as compared to similar group examinations made in other industries. Only 89 employees, or less than one per cent, were found to have physical defects which rendered their further service dangerous to themselves and to the traveling public. Of these, 69 were entitled to pensions and were, accordingly placed on the pension list. Of the 20 remaining, who were not entitled to pensions, the majority were given other positions with the railway, where their own and other peoples' safety will not be endangered by their physical defects.

A large variety of defects were found, however, which, while not serious enough to justify disqualification, might have resulted in serious and fatal ailments if permitted to develop. A summary of the ailments found is given in the accompanying table.

In every case where defects were found that were not too serious and far advanced, the examining physician informed the man of his condition, giving him full information as to the cause and effect of the ailment from which he was suffering. In some cases, the men were granted leaves of absence in order that they might correct defective conditions; in other, milder cases, they were advised to consult their family physicians and take precautionary measures, but continued working.

A statistical analysis was made of the average diet of the employees examined. The results show that the average daily food consumption of these men was the

equivalent of 14,900 calories, as compared with a normal daily requirement of 3,500 calories. In other words, railway men, in common with nearly every one else, eat three or four times as much food as they should. This is also indicated by the fact that 1,417 employees or 14.59 per cent of those examined, were overweight to an extent that was seriously affecting their health and producing abnormal blood pressure, heart defects and other conditions.

Summary of Defects Found

Condition	Total Examined (9,633)	Total Per Cent
High Blood Pressure	841	8.66
Overweight	1,417	14.59
Heart Disease	378	3.89
Pyorrhea	357	3.67
Carious Teeth	859	8.84
Artificial Teeth	906	9.33
Tonsils	631	6.49
Goitre	213	2.19
Diabetes	110	1.13
Nephritis	167	1.72
Abnormal Specific Gravity	839	8.64
Tachycardia and Bradycardia	913	9.40
Hearing Abnormal	253	2.60
Herniae	294	3.02
Hypotension	388	3.99
Hemorrhoids	174	1.79
Varicose Veins	188	1.93
Varicocele	370	3.81
Flat Feet	130	1.33
Defective Vision	1,988	20.47
Underweight	78	.80
Hydrocele	40	.41

How the Examination Was Conducted

The entire program of examination of these 10,000 men was completed within four months, at 90 different points on the line. These points were selected as examination centers, because their location enabled the work to be done at times most suited to the convenience of the employees. The expense of the examination was borne by the railway. The examining physicians were provided with the necessary equipment and instructions by the chief surgeon's office.

Chief Surgeon Planned Work

The work was planned and supervised by the chief surgeon, who evolved special forms to be used by the examiners. These forms are concise, consisting of only one sheet, but they show clearly all the information that is desired. The forms were filled out in duplicate, one copy being retained by the examining physician, the other being sent to the chief surgeon's office. Here a complete file is maintained for every employee examined. The examination records of employees entering the service are incorporated with this file, so that a complete medical record of every employee in train, engine, yard and dining car service is available at all times. A card index is kept, separate as to the division on which the man is employed. This system is also followed out in the files, which also contain any correspondence which may develop in regard to any case. A notice is sent to the chief surgeon of the death and the cause thereof of all employees who have undergone this examination so that his file may be referred to to see if his condition as to blood pressure, heart or any other condition on record may have been the cause of his death. The value of such a file and the variety of purposes it serves may be readily appreciated.

No one was taken out of the service except by authority from the chief surgeon. The examining physicians took no action beyond sending their reports to him. The reports were checked carefully by the chief surgeon. The employee was given a card at the time of examination as a certificate only. If any other action was found necessary, the employee involved and his supervisory officer were informed and the employee was granted a furlough, transferred to some other occupation or placed on the pension list as the case required.

A complete and thorough examination of all train, engine and yardmen will be made every two years, and dining and parlor car employees every six months while all men 50 years of age or over, or men wearing glasses or suffering from any condition that should be watched, will be examined annually or more frequently if their condition warrants.

Attitude of the Men

These periodic physical examinations are for the benefit of the traveling public, the employees and the railway alike. By the detection of incipient diseases in their early stages in those who are supposed to be physically fit, they prevent the neglect which may, within a few months or a few years, lead to an incurable condition or death, resulting in loss to the employee, his family and the railway.

Many years of earnest effort and much missionary work were necessary to bring the employees to an understanding that periodic physical examinations were largely for their own benefit. They finally agreed to be examined in 1927, when the majority of them, through reading medical articles in newspapers, insurance statistics, radio health talks, etc., were convinced of the importance of periodic physical examinations, an importance which assumes even greater proportions in the case of railway men, who bear the responsibility not only for themselves, but for the traveling public as well. The manner in which the examination was conducted has convinced them that they were right in their conclusions. Many of them, who were headed for complete failure and physical breakdown in a few months or years, have been informed of abnormal conditions existing of which they were not aware. Valuable advice and proper instructions have been given to enable them to correct and eliminate these conditions.

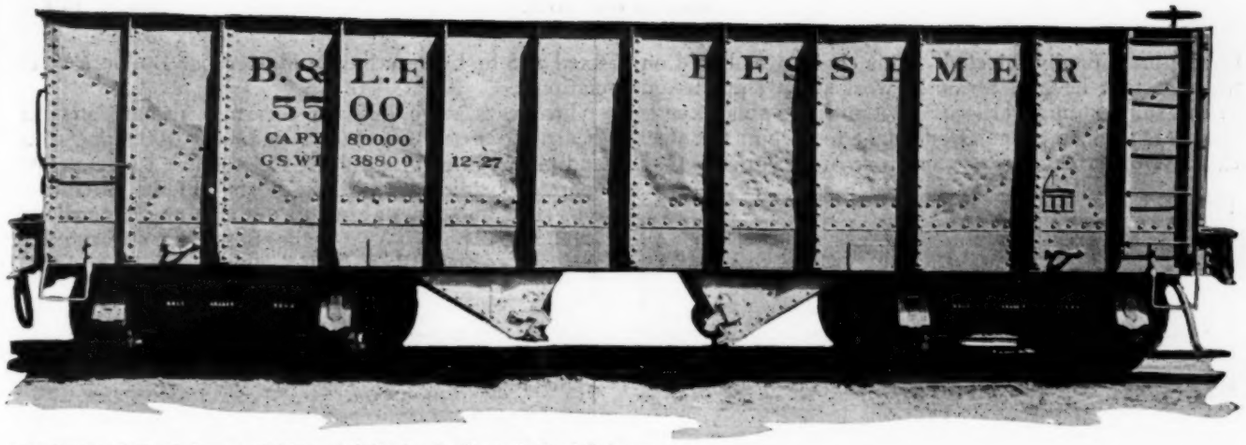
After the men learned that the only object of the company was to prolong their lives and usefulness, they requested that the examinations be made periodically hereafter. Many of them have even offered to pay for additional examinations where they believe it necessary.

The success in selling the idea to the men is largely attributable to the manner in which the examinations were handled. In every case, the findings of the examining physician were kept confidential, the only persons knowing the facts being the man himself, the examining physician and the chief surgeon.

In the rare instances where it was necessary to take an employee out of service or pension him, his employing officer was notified to that effect, although the exact cause was not mentioned. Likewise if the man was to be granted a leave of absence in order that he might undergo treatment, no mention was made of the exact reason. In this manner, the employee was saved from all embarrassment.

The cost of making these examinations was not excessive, whereas even in the short time that has elapsed since the examinations were made, the results have convinced the management that the expenditure made for the "maintenance of men" was amply justified.

CITIZENS OF WESTERN MICHIGAN have advanced a plan, which will be presented before an early meeting of the Michigan Public Utilities Commission, of preventing grade crossing accidents by requiring that trains come to a full stop before crossing a trunk highway. The plan is proposed only for those railroads in northern and western Michigan which do not operate more than two or three trains a day.



Steel Hopper Built of Structural Shapes in 1896 by the Carnegie Steel Company

First Cars of All-Steel Construction Retired this Year

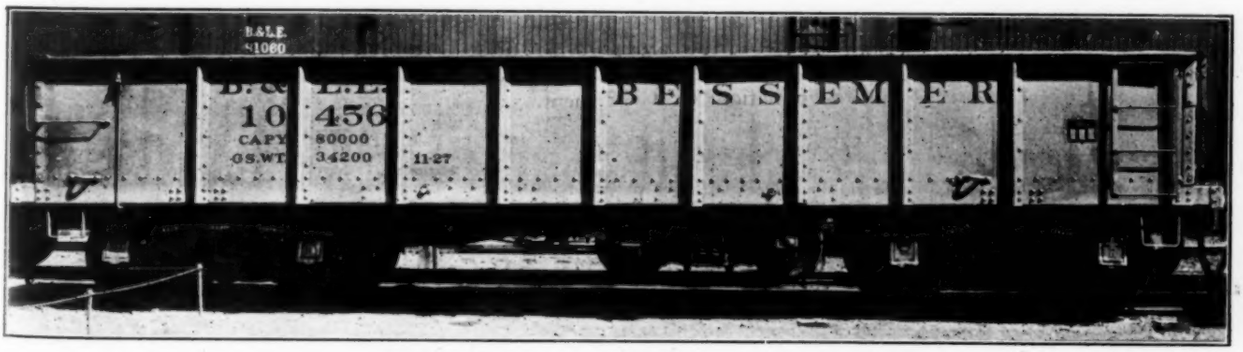
Bessemer & Lake Erie arranges permanent exhibit of four earliest types at its Greenville shops

IT is a matter of record that the Bessemer & Lake Erie was the first railroad to use open-top cars of all-steel construction designed along lines similar to those followed in present-day all-steel cars. Prior to 1896 there were no all-steel freight cars in the United States, with the exception of a few flat cars used in industrial service. Although a number of attempts had been made as early as 1845 to utilize wrought iron in the construction of both box and hopper cars, as far as can be ascertained from available records, these cars were built with metal bodies secured to wood underframes. Several examples of this type of car construction were exhibited at the "Fair of the Iron Horse", held last year by the Baltimore & Ohio at Halethorpe, Md. A hopper car exhibited had a capacity of 40,000 lb. and a weight of 16,350 lb. and a box car, also, on exhibition, had an empty weight of 21,950 lb. Both of these cars were used by the Baltimore & Ohio.

First Car Built by the Carnegie Steel Company

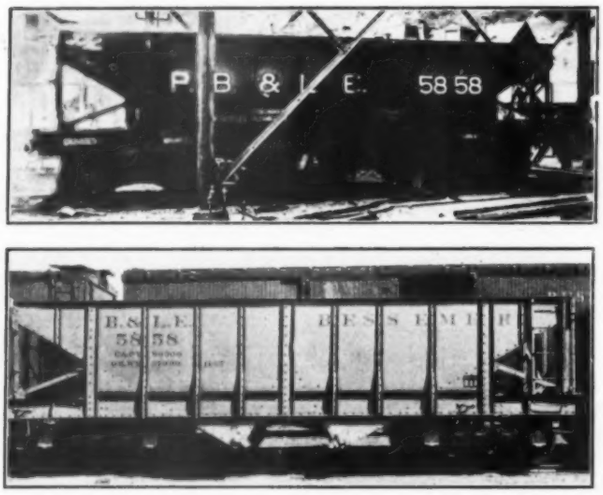
In 1896, the Carnegie Steel Company became convinced of the practicability of using cars of all-steel construction for general railroad service and instructed the engineering department of the Keystone Bridge Works, a subsidiary company, to design an all-steel hopper car. At that time, the prevailing type of hopper car for ore, coal and similar commodities was of all-wood design and 60,000 lb. capacity with journals 4¼ in. by 8 in.

The engineers of the Keystone Bridge Works were all experienced in bridge and building design, but none of them were familiar with cars, so it was difficult to make a selection of the man to design a car of all-steel construction. J. B. Hardie, a native of Scotland, was



First Gondola of Schoen Design, Built in 1899

the engineer finally selected. This choice was based on the fact that he had formerly worked on ship design in the shipbuilding yards of Scotland and this experience was deemed an asset sufficient to fit him for steel car design perhaps better than that of the others. Guy



Top—Hopper Car No. 5858 Coming Out of the Shop in 1897; Bottom—The Same Car 31 Years Later

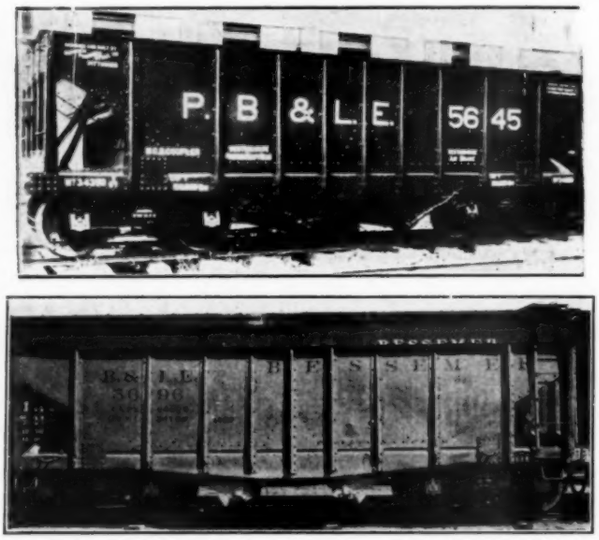
M. Gray, now superintendent of motive power, Bessemer & Lake Erie, Greenville, Pa., was a draftsman of the Keystone Bridge Works at that time and he was assigned as an assistant to Mr. Hardie.

Although it was quite a task for a bridge designer, even with shipbuilding experience to design a steel car, without knowing anything in detail about the construction or operation of a car, Mr. Hardie, after a detailed preliminary study of the then-existing all-wood car, finally completed the design of an all-steel hopper car of 80,000 lb. capacity, the body being composed of structural shapes and the trucks having journals 4¾ in. by 9 in.

First Car Had 4½-in. by 8-in. Journals

It is interesting to note how this size of journal was determined; a 40-000-lb. capacity car had 3¾-in. by 7-in. journals and a 60,000-lb. capacity car had 4¼-in. by 8-in. journals, the latter having ½ in. greater diameter and 1-in. greater length than the former and this same proportion, carried forward, produced for the 80-000-lb. capacity car the 4¾-in. by 9-in journal size. The standard size of journal for 80,000 lb. capacity cars was later fixed at 5 in. by 9 in. by the Master Car Builders' Association.

Two cars were built to this new design, stenciled "Carnegie Steel Company", numbers 1008 and 1009, and placed in service July 1, 1896. These two cars were operated between Lake Erie ports and the Pittsburgh, Pa., steel mills in the ore trade, and on September 1, 1902, were purchased by the Bessemer & Lake Erie and re-stenciled "B. & L. E.", numbers 5499 and 5500.



Top—First Hopper Car of Schoen Design, Built with Pressed Steel Shapes in 1897; Bottom—The Same Car in 1928

Car No. 5499 is still in service, but car No. 5500 has been retired and set aside as a historical exhibit. The present condition of these two cars after 32 years of service is excellent. Car No. 5500 has run 222,033 miles.

Six Hundred Cars Ordered in 1897

After these two cars had been used for about a year and their operation had proved practicable, the B. & L. E., (then the Pittsburgh, Bessemer & Lake Erie), placed an order in 1897 with the Schoen Pressed Steel Company for 600 steel hopper cars of 80,000 lb. capacity. Four hundred of these cars were built to Mr. Hardie's design, which was based on the design of the two original cars, but modified slightly as the result of experience with these cars in regular service. The other 200

Historical Data, Weights and Capacities of the First All-Steel Cars Owned by the Bessemer & Lake Erie

Car number	5500	5696	5858	10456
Kind of car	All-steel hopper	All-steel hopper	All-steel hopper	All-steel gondola
B. & L. E. classification	H1A	H2A	H3C	G1A
Initials	B. & L. E.	P. B. & L. E.	P. B. & L. E.	P. B. & L. E.
Design	Carnegie	Schoen "A"	Carnegie	Schoen
General construction	Structural shapes	Pressed shapes	Structural shapes	Pressed shapes
Builder	Carnegie Steel Co.—Keystone Bridge Works	Schoen Pressed Steel Co.	Schoen Pressed Steel Co.	Schoen Pressed Steel Co.
Where built	Pittsburgh, Pa.	Allegheny, Pa.	Allegheny, Pa.	Allegheny, Pa.
When built	July 1, 1896	Sept. 18, 1897	Nov. 9, 1897	May 14, 1899
Date purchased	Sept. 1, 1902	Jan., 1898	Jan., 1898	May, 1899
Date retired	Feb. 11, 1928	Feb. 11, 1928	Feb. 11, 1928	Feb. 11, 1928
Where stored	Greenville, Pa.	Greenville, Pa.	Greenville, Pa.	Greenville, Pa.
Time in service	31 yr. 7 mo. 10 days	30 yr. 4 mo. 23 days	30 yr. 3 mo. 2 days	28 yr. 8 mo. 27 days
Original weight, lb.	39,950	34,350	37,150	29,900
Last weight, lb.	38,800	35,100	37,300	34,200
Nominal capacity, lb.	80,000	80,000	80,000	80,000
Maximum weight on rail, lb.	136,000	136,000	136,000	136,000
Load limit, lb.	97,200	100,900	98,900	101,800
Capacity, level full, cu. ft.	1,015	1,130	1,028	1,042
Capacity, with 2-in. heap, cu. ft.	1,262	1,392	1,279	1,346
Capacity, with run-of-mine coal, lb.	66,634	73,498	67,531	71,069
Total mileage in life of car	222,033	213,419	212,499	201,721

were built to a design evolved by the Schoen Pressed Steel Company and differed mainly from Mr. Hardie's design in that pressed steel parts took the place of structural shapes.

One car of each of these two designs has been included in an historical exhibit which has been set up by the Bessemer & Lake Erie at its shops at Greenville, Pa., No. 5858 represents the Carnegie Steel Company design and No. 5696, the Schoen design. These two cars have been in service 30 years and have run 212,499 miles and 213,419 miles, respectively.

The last order was followed by one for 400 additional steel hopper cars and, in 1899, an order was placed for 700 steel gondola cars of 80,000 lb. capacity, these cars being built to the pressed steel design of the Schoen Pressed Steel Company. One of these cars, No. 10456, has also been included in the historical exhibit. It has been in service 29 years and has run 201,721 miles.

Dimensions and Original Equipment of the First Bessemer All-Steel Cars

Car number	5500	5696	5858	10456
Dimensions:				
Inside length	28 ft.	28 ft. ¼ in.	28 ft. 6 in.	32 ft.
Inside width	8 ft. 10½ in.	9 ft. 2 in.	8 ft. 10½ in.	9 ft. 2 in.
Inside height				3 ft. 6 7/16 in.
Length over striking plates	30 ft.	29 ft. 7½ in.	30 ft.	33 ft. 6 7/16 in.
Length of car in train	32 ft. 1 in.	31 ft. 8½ in.	32 ft. 1 in.	35 ft. 8½ in.
Outside width	9 ft. 10½ in.	9 ft. 8 in.	9 ft. 7⅞ in.	9 ft. 8½ in.
Height from rail to top of body	8 ft. 9 in.	8 ft. 9 in.	8 ft. 9 in.	9 ft. ¾ in.
Distance center to center of trucks	19 ft. 10 in.	19 ft. 9 in.	20 ft. 3 in.	22 ft. 6 in.
Original Equipment:				
Coupler, size	5 in. by 5 in.	5 in. by 5 in.	5 in. by 5 in.	5 in. by 5 in.
Coupler, make	Janney freight	Tower	Tower	Tower
Draft gear	Westinghouse	Westinghouse	Westinghouse	Westinghouse
Air brake	Westinghouse HD-812	Westinghouse HD-812	Westinghouse HD-812	Westinghouse HD-812
Doors, number	4	4	4	4
Doors, size of opening	2 ft. 3 in. by 3 ft. 2¾ in.	2 ft. 2¾ in. by 3 ft. 5½ in.	2 ft. 3 in. by 3 ft. 1¼ in.	2 ft. 4¼ in. by 3 ft. 4⅞ in.
Original coupler attachment	Tail pin	Tail pin	Tail pin	Yoke
Trucks:				
Kind	Fox pedestal	Schoen pedestal	Fox pedestal	P. S. Diamond (Vogt)
Wheel base	5 ft. 2 in.	5 ft. 6 in.	5 ft. 6 in.	5 ft. 7 in.
Size journals (Original)	4¾ in. by 9 in.	5 in. by 9 in.	5 in. by 9 in.	5 in. by 9 in.
Kind of axles (Original)	No record	Carnegie nickel steel	Carnegie nickel steel	Open-hearth steel
Bolster				Pressed
Wheels, size, in.	33	33	33	33
Original wheels, kind	C. I. for 40-ton car	T. M. special C. I.	T. M. special C. I.	600 lb. C. I.
Present wheels, kind	Wrought steel	Wrought steel	Wrought steel	Wrought steel

Cars Built in 1897 Were Equipped With Nickel-steel Axles

The 600 hopper cars built in 1897 were equipped with nickel-steel axles, as it was thought that the use of this material would enable them to carry a load of 100,000 lb. This was found, however, to be impracticable, and the capacity was reduced to 80,000 lb.

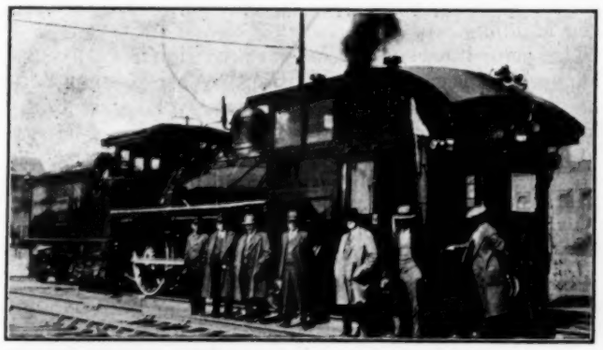
As shown in one of the tables, the trucks were originally of Fox design, having 4¾-in. by 9-in. journals. Later, 5½-in. by 10-in. arch-bar trucks were substituted under one of these cars and the capacity was changed to 100,000 lb. The repair records up to March 4, 1915, on the 100,000-lb. capacity car, show that one pocket sheet was renewed in December, 1901, and three pocket sheets were renewed in April, 1905. In April, 1907, two side sheets were renewed and four floor angles spliced. In August, 1909, four side sheets, two side stakes and one pocket wing sheet were renewed and four side stakes repaired. In September, 1910, one side sheet was spliced and in May, 1911, two floor sheets and two floor-sheet angles, were renewed. A year later the car came into the shop for the renewal of one floor-sheet and one floor-sheet angle. The heaviest repairs made to the car since its construction were in September, 1914, after about 19 years of service, when a new floor, new divide sheets, eight pocket sheets, four side stakes, two corner side sheets, four floor angles, new hoods and six divide-sheet angles were applied to the car. Repairs were made to the sides of the car body at the same time. Five side stakes were repaired on March 4, 1915.

The record of repairs made to this car since March 4, 1915, is in general, similar to the repairs made during the first 18 years of the life of the car, except for the extensive repairs in September, 1914. In other words, the repairs since 1915 were to individual parts damaged by corrosion, accident, or wear and tear by unloading machinery. At no time during the 31 years' life of this car were copper-bearing sheets applied, nor was it necessary to strengthen the center-sill construction. The original center sills were 15-in. I-beams which have stood up exceedingly well in service.

The dimensions, original equipment and historical data pertaining to the first four cars which have been placed in the permanent exhibit, are shown in the two tables.

C. B. & Q. Builds Inspection Engine at Hannibal Shops

INSPECTION locomotive No. 389, which is shown in the illustration, was completed in the latter part of April, 1928, at the Hannibal, Mo., shops of the Chicago, Burlington & Quincy. It is a 4-4-0 type locomotive capable of high speed. The interior of the observation compartment is neatly arranged with terraced seats for ten people. It is equipped with a water cooler and electric lights. A 9,000-candle-power searchlight, which enables the inspecting officers to see objects at a distance of 1,200 ft., is located on the front of the inspection cab. The locomotive is also provided with a Stromberg air whistle.



Inspection Locomotive Built by the Burlington at its Hannibal, Mo., Shops

Executives Get Express Purchase Report

Plan under which railroads may take over American Railway Express

COPIES of the plan under which the railways of the United States may take over the operation of the express business, now conducted by the American Railway Express Company, were mailed on July 16 to executives of those roads which are now parties to the uniform contract with the express company.

The document, which was sent out by the uniform contract committee of the Association of Railway Executives, is dated June 21, 1928, and is called the "Report and Plan for the Future Conduct of Express Business".

The report calls for the appointment of W. B. Storey, president, Atchison, Topeka & Santa Fe; W. W. Atterbury, president, Pennsylvania; P. E. Crowley, president, New York Central; and Carl R. Gray, president, Union Pacific, to act as agents in carrying out the provisions of the plan. These four agents are given broad powers under the plan to negotiate with the present express company for its acquisition by the railways.

Two alternative methods of acquisition are suggested in the report. One calls for the purchase of the express company assets at cost less depreciation, as specified in the contract which expires on February 28, 1929. The other contemplates the acquisition of all outstanding stock of the American Railway Express Company. If negotiations for the acquisition of the property should not bring about an agreement between the parties, the agents will then negotiate for the purchase of the stock at a fair price.

For the continuation of the express business following the acquisition, the plan provides for the incorporation of a new company to be known as the Railway Express Agency, Inc. Securities of this new company which will probably be incorporated in Delaware will be distributed among the various participating railways in proportion to the amount of express business they have been handling.

The plan, however, makes no provision for any exchange of stock of the new company for present outstanding stock of the American Railway Express Company. When the negotiations of the four railway agents with the express company representatives have resulted in a definite plan for the acquisition, the resultant purchase scheme will be submitted for final approval by the committee which has been handling the matter since discussions on it opened late in 1927, following the decision of railway executives not to renew their contracts with the express company which expire in 1929.

In the letter of transmittal accompanying the report to the carriers it was stated that railroads handling 90 per cent of the express business had already assented to the plan in principle.

The report is divided into several parts, as follows:

Report of the Legal Committee.

Plan for Future Conduct of Express Business.

Agreement with Negotiating Agents (to be executed by carriers and returned to Uniform Contract Committee).

A Table of Percentages and Allotment of Shares.

Exhibits giving the certificate of incorporation of the new express company and by-laws of the new company.

A copy of an agreement between the railroads and the new express company.

An abstract of the report of the legal committee and the plan for the future conduct of the business follow:

Report of Legal Committee

The Legal Committee appointed on March 5, 1928 by your Committee (the Uniform Contract Committee) submits the following report:

The Committee was instructed to draft an agreement to be submitted to the several railroad companies now parties to the Uniform Express Contract which will provide for the purchase of the stock of the American Railway Express Company or the formation of a new express company in accordance with the terms of the resolution adopted by the Uniform Express Contract Committee and approved by the Association of Railway Executives November 16, 1927.

Pursuant to such instruction the Committee has prepared and submits herewith a "Plan for Future Conduct of Express Business."

The object sought to be attained by the plan is to make the future express agency a railroad-owned joint facility engaging in express transportation in its own name, but nevertheless acting in fact only as the agent of its railroad principals and accounting to them under the terms of the operating agreement for all of its revenues after payment of expenses. This relationship will make the railroads transporters of express as they are of freight with a consequent like status before commissions and courts.

To accomplish such object the plan provides for the organization by the agents representing the participating railroads of a new express company to be owned by such railroads and for the acquisition by it of the properties used in express operations of the American Railway Express Company.

As an alternative it is provided that if it should prove practicable for the agents to acquire the entire outstanding capital stock of the American Railway Express Company upon satisfactory terms they shall be authorized to do so and to amend its charter and by laws and readjust its capital structure to conform to that proposed for the new express company.

It is proposed that the railroads comprising substantially all of the membership of the Association of Railway Executives shall participate in the ownership of the express company, but with the privilege available to all other railroad companies now parties to the Uniform Express Contract to become parties to the new operating agreement.

The shares of the express company are to be allotted to each railroad in the ratio that the express business handled on its lines, as measured in receipts, bears to the gross business so handled by all of the participating railroads. A table of participating percentages has been computed upon the average for the years 1923, 1924, 1925 and 1926 of the distribution of business.

Not to Be a Profit-Making Company

Since the capital stock of the express company will not constitute the basis for distributing earnings, it is proposed to limit its total to 1,000 common shares without par value to be paid for in cash at the price of $100 per share and to be nontransferable except to the express company itself, or to a successor corporation by consolidation, merger or purchase.

The proposed by-laws of the express company, subject to change in this respect only by a vote of two-thirds of the capital stock, provide that its directors shall be nominated in groups allocated to geographical districts, the railroads

located in each such district to vote exclusively upon the group nominees for the same.

The properties required for express operations are to be acquired by the new express company by purchase, or by lease, or partly by purchase and partly by lease, as the agents of the railroads in their negotiations shall determine. The cost of the properties to be purchased will be financed through bonds, debentures or notes to be sold to the public, or to be taken by the respective participating railroads proportionately in accordance with the table of percentages above mentioned, or to be delivered as payment to the vendor.

The following table, showing the book values of the American Railway Express properties as of December 31, 1927, is included in this report as a matter of general information:

Land owned (cost)	$4,641,261.80
Buildings and improvements not located on railroad right of way (cost less depreciation)	6,480,984.48
Buildings and improvements located on railroad right of way (cost less depreciation)	2,430,796.83
Equipment (cost less depreciation)	12,519,400.12
Materials and supplies (cost)	1,183,894.28
Total	$27,256,337.51

The legal committee's report is signed by R. J. Cary, *Chairman,* M. L. Bell, J. P. Blair, H. W. Clark, C. B. Heiserman, F. C. Nicodemus, Jr.

Plan for Future Conduct of Express Business

It is proposed that the railroad corporations hereinafter called "the Railroads," unite in conducting, through their own express agency, the future operations of the express business, acquiring for that purpose the operating equipment and properties, or, if practicable, the entire capital stock, of the American Railway Express Company. To accomplish that end the following plan is submitted:

1. The Railroads, severally, shall forthwith evidence their assent to this Plan by the execution of agreements hereto attached, said agreements embodying the appointment of Messrs. William B. Storey, Wallace W. Atterbury, Patrick E. Crowley and Carl R. Gray, as Agents of the Railroads and conferring on them the requisite power to carry this Plan into effect. The Railroads so assenting are hereinafter called the "Participating Railroads."

Note—The participation in this Plan is limited to the member roads of the Association of Railway Executives, named in the table attached to Exhibit A, because of the impracticability of joining the very large number of other roads which perform in the aggregate only about 2 per cent of the gross express business transacted under the uniform Contracts with the American Railway Express Company. Any company named in the table may distribute its participation under this Plan among affiliated companies by apportionment, according to its choice, of its allotment, hereinafter provided, of stock and of bonds, debentures or notes. The participations of any companies which have become affiliated may be combined, at their option.

2. This Plan shall be effective when agreements shall have been duly executed and delivered to the Agents on the part of Participating Railroads representing in the aggregate 75 per cent of the gross express business according to the allocation in the table of percentages.

3. The Participating Railroads, severally, by their execution of the agreements will assign, transfer and set over to the Agents all their right, title and interest, respectively, under substituted Article XX of the Amended Uniform Contract for Express Operations Over Rail Lines, adopted by agreements between each of the Participating Railroads and the American Railway Express Company, on or about February, 1927, embodying the agreement of the American Railway Express Company, in the event that it does not continue express operations over the lines of the contracting railroad company after midnight on February 28, 1929, to sell to such railroad company, at cost less depreciation, all property of said Express Company, used in its express operations, located on the lines of such railroad company.

Note—By these assignments the Agents will be invested with the right to acquire all the equipment and operating properties of the American Railway Express Company located on the lines of the Participating Railroads, in the aggregate, and in a position, when in funds, to pay therefor a single sum price, thus avoiding any necessity of ascertaining the values separately of the express properties located on the several lines.

4. The Agents shall notify the American Railway Express Company, as soon as this Plan shall have become effective, that the Participating Railroads will not renew the existing Amended Uniform Contract for Express Operations Over Rail Lines upon its expiration on February 28, 1929, or enter into negotiations for any new contract with the American Railway Express Company covering the operating of the express business after the expiration of said present contract.

5. The Agents shall secure the organization under the laws of such state as they shall choose of a new corporation, under the name of Railway Express Agency, Incorporated, or such other name as shall be found available (hereinafter called the "New Express Company"), with power to acquire all or any part of the equipment and other properties of the American Railway Express Company and to conduct the future operation of all the express business heretofore conducted by said last named company.

6. The certificate of incorporation of the New Express Company shall provide for an authorized issue of only One thousand (1000) shares of capital stock, without par value, and non-transferable except to the New Express Company itself or to a successor corporation by consolidation, merger or purchase. Said stock shall be allotted to the Participating Railroads for subscription according to the table of allotment of shares, and the Participating Railroads by the execution of the agreements will subscribe, respectively, for the number of shares of said stock allotted to them according to said table, at the price of One hundred Dollars ($100) per share, payable in cash upon the call of the Agents or of the New Express Company.

Note—The scheme of stock ownership above indicated is predicated upon the conclusion that the property acquired by the New Express Company should be paid for with borrowed money and represented by bonds, debentures or notes, and that the capital stock should not represent any substantial equity in the property but merely the voting rights. The indicated distribution of the shares and therefore of the voting rights conforms as closely as practicable to the percentages of gross express business done by the Railroads in the past. The distribution of the stock does not affect the distribution of earnings from the express business, which will be distributed under and in accordance with the operating contract, rather than as dividends.

7. It is an essential feature of the by-laws (which cannot be changed except by vote of two-thirds of the outstanding capital stock) that the Board of Directors shall consist of 15 members, of whom six shall be nominated by the Participating Railroads of the Eastern District, five by those of the Western District and three by those of the Southern District, and one shall be elected at large.

8. The Agents, upon perfecting the organization of the New Express Company shall proceed to effect such qualification of the company as shall be necessary in the several states.

9. The Agents shall proceed to negotiate for and agree upon the acquisition of the equipment and operating properties of the American Railway Express Company, or as much thereof as they shall deem necessary for the operations of the New Express Company, or of properties in lieu thereof, and such acquisition may be upon any of the following bases:

(a) The purchase of all or any part of the property of the American Railway Express Company which is subject to the obligations of the aforesaid substituted Article XX of the Amended Uniform Express Contract, at its cost less the depreciation chargeable under Article V, Section 4 item (e) of said contract.

(b) The leasing of any real property owned by the American Railway Express Company which is subject to the obligations of said substituted Article XX, including buildings erected upon land not owned by said company, at such rental as the Agents shall deem satisfactory.

(c) The purchase or leasing, upon such terms as the Agents shall deem satisfactory, of any or all equipment and property owned by the American Railway Express Company and used in its express operations but not subject to the obligations of said substituted Article XX, if the agents shall conclude that there is any such property not subject thereto, and of any property so used by the American Railway Express Company but not owned by it.

(d) In the event of disagreement as to whether certain items of property are subject to the obligations of said substituted Article XX (hereinafter called "property in controversy"): The purchase of any property in controversy upon any consideration, other than cost less depreciation as aforesaid, deemed by the Agents substantially satisfactory from the standpoint of the Railroads; or the leasing of any property in controversy upon such terms as the Agents shall deem satisfactory; or the purchasing or leasing from other owners than the American Railway Express Com-

pany, upon such terms as the Agents shall deem satisfactory, of other property in lieu of any property in controversy; or the arrangement for the temporary use, upon such terms as the Agents shall deem satisfactory, of any or all property in controversy, or of other properties in lieu thereof, pending the settlement of such controversy; and with full power to the Agents to prosecute or defend any litigation or participate in any arbitration of the question whether particular properties are within the subject-matter of said substituted Article XX and to compromise such controversy as to any properties.

(e) The purchasing or leasing, from other owners than the American Railway Express Company, upon such terms as the Agents shall deem satisfactory, of any equipment and other property deemed by the Agents necessary for the operations of the New Express Company, whether in lieu of or in addition to equipment and other property of the American Railway Express Company.

Financing the New Company

Note—It is deemed necessary that the foregoing broad authority to proceed upon alternative bases be conferred on the Agents, to empower them to proceed as the interests of the Participating Railroads appear to be best served. Any limitation of their authority might result in their inability, through the interposition of some unforeseen obstable or contingency, to consummate this Plan. Further, the Agents would be subjected to a distinct disadvantage in negotiating for the properties of the American Railway Express Company if authority were not extended to them to acquire other properties.

10. The Agents may agree to pay in cash the consideration for any or all properties to be purchased from the American Railway Express Company; or they may agree to deliver to the American Railway Express Company bonds, debentures or notes of the New Express Company to represent the purchase price of any or all of said properties.

Note—The above authority to deliver securities does not include stock of the New Express Company. It is deemed essential that the express operating agency shall realize no net income for distribution as dividends and this precludes the issue of its stock to any other holders than the Participating Railroads.

11. The total cash requirement for the purchase of all properties to be acquired for the New Express Company for cash considerations, pursuant to arrangements and agreements of the Agents, together with such an additional amount of cash as the Agents shall determine to be necessary for organization expenses and working capital, over and above the amount of the subscriptions of the Participating Railroads for the capital stock of the New Express Company as provided in the foregoing paragraph 6, shall be contributed by the Participating Railroads by their purchase of bonds, debentures or notes of the New Express Company as hereinafter provided, or such cash requirement may be raised by the sale of such bonds, debentures or notes to the public. The Agents shall ascertain and determine the amount of the total cash requirement aforesaid, and determine upon and arrange for an issue of bonds, debentures or notes of the New Express Company sufficient to provide the amount of such cash requirement. Said issue of bonds, debentures or notes, if not sold to the public, shall be allotted by the Agents to the Participating Railroads on the basis of the table of percentages, each Railroad sharing in the total issue of said bonds, debentures or notes in the proportion which the percentage assigned to it by said table bears to the aggregate of the percentages so assigned to all the Participating Railroads. Such adjustments shall be made in said allotment as may be necessary to avoid fractions of $100. Calls shall be made upon the Participating Railroads for the payment of their allotment seasonably to render the money available before February 28, 1929, and the Participating Railroads shall pay their said allotments when and as called by the Agents or the New Express Company.

12. The Agents shall in their discretion determine the character of the securities to be issued by the New Express Company, whether bonds, debentures or notes, the maturity of such bonds debentures or notes, the mortgage security, if any, to be given therefor, the rate of interest to be borne thereby and their form and terms in all other respects, and the form and terms of any mortgage securing the same and the price at which said securities shall be issued.

13. The determination as to the extent, if at all, to which the New Express Company shall take over and conduct, at least temporarily, for the future the express operations of the American Railway Express Company upon steamship or stage lines or lines of railroads not participating in this Plan shall be vested in the Agents.

To Take Over Express Company's Organization

14. The Agents may enter into an agreement with the American Railway Express Company, or otherwise arrange, for the taking over on February 28, 1929, of the operating and office organizations and personnel of the American Railway Express Company, its records and offices, or such part thereof as the Agent shall deem necessary or desirable for the operations of the New Express Company, and as a part of any such agreement or arrangement, the Agents may arrange for the assumption by the New Express Company of the obligation of the employees pension system of the American Railway Express Company.

15. The Agents may arrange for the assumption by the New Express Company of all or any operating liabilities of the American Railway Express Company existing on February 28, 1929, whether ascertained or not, upon the payment over to the New Express Company of the amount of the reserves set up by the American Railway Express Company for such liabilities, or upon such other consideration as the Agents shall deem satisfactory.

16. Seasonably prior to February 28, 1929, the New Express Company will pay over or deliver to the American Railway Express Company the consideration, whether in cash or securities, agreed upon for properties to be purchased from it, upon the American Railway Express Company delivering to the New Express Company, effective at the close of business on February 28, 1928, (1) a bill of sale of all personal property; (2) a contract for the sale of such parcels of real estate as are to be conveyed by it, with the right to the immediate possession and use thereof pending the subsequent delivery of deeds, unless such deeds can be prepared seasonably for delivery at the time of closing: (3) leases of any properties agreed upon; and (4) any contract which shall have been arranged regarding the turning over of the organization, records and offices or pertaining to other matters.

17. The New Express Company will file prior to February 28, 1929, with the Interstate Commerce Commission and with each State Commission, or elsewhere as shall be required, its adoption of the then existing tariffs of the American Railway Express Company as its tariffs effective March 1, 1929.

18. The New Express Company will execute and exchange with the Participating Railroads, severally, a new uniform operating contract to become effective March 1, 1929, in the form hereto attached.

Note—The new operating agreement is drafted with the object of making the several railroads, parties to it, common carriers of express shipments and principals in this respect, operating in the name of their common agent, the New Express Company. The Express Company will be in effect a joint facility agency, which, after deductions required for expenses and other charges, will distribute all revenues received by it among its principals. This will accomplish the change in the relationship of the railroads to the express business which has long been advocated by members of the Interstate Commerce Commission. In other respects the operating agreement follows generally the plan of the present uniform express contract. Any company named in the table attached may, at its option, have any or all of its affiliated companies enter into separate operating agreements with the New Express Company.

19. The New Express Company will thereupon take over the operation of the express business on March 1, 1929.

20. If it should prove practicable for the Agents to acquire the entire outstanding capital stock of the American Railway Express Company upon terms deemed by them satisfactory they are authorized to do so, as an alternative to the organization of a new express company, and thereupon to disregard any provisions of this Plan incidental to the latter procedure. The Agents may purchase such stock at such price as they shall deem satisfactory and pay therefor in cash or, under a readjustment of the capital structure of the American Railway Express Company as hereinafter mentioned, by the issue of bonds, debentures or notes of the American Railway Express Company, in lieu of the existing stock, representing such purchase price. In the event of payment in cash, the cash required shall be contributed by the Participating Railroads by the purchase of bonds, debentures or notes of the American Railway Express Company, to be issued in lieu of the existing capital stock under said readjustment of the capital structure, proportionately as provided in the foregoing Paragraph II, or the cash required may be secured by the sale of bonds, debentures or notes to the public. The Agents shall have the same authority in respect of

the securities to be issued by the American Railway Express Company under this alternative plan as that conferred on them by the foregoing paragraph 12 in the case of securities of the New Express Company. But in the event of the acquisition of the capital stock of the American Railway Express Company the Agents shall proceed forthwith to amend its certificate of incorporation and by-laws to conform substantially to Exhibits B and C, and shall allot its new no-par-value stock of the aggregate of 1000 shares to the Participating Railroads as provided in the foregoing paragraph 6, and shall thereupon surrender and have cancelled the old capital stock so acquired by them. In the event of this alternative plan being adopted, the American Railway Express Company, then under the control of the Participating Railroads, will enter into new operating contracts with the several Participating Railroads, effective March 1, 1929.

Note—It is essential to procedure under this alternative provision that there shall be no minority of old stockholders of American Railway Express Company outstanding after the Participating Railroads acquire control.

21. Any railroad which does not become a party to this Plan, including the numerous short roads to which full participation is not extended, will still be under the obligation of substituted Article XX of the Amended Uniform Contract to buy the express properties located on its lines. Presumably, although not parties to this plan, such roads will deem it desirable to assign their rights under substituted Article XX to the Agents. The Agents are authorized to accept such assignments upon receiving the undertakings of such non-participating railroads to pay over to the Agents the amount necessary to pay the cost less depreciation of the properties local to their lines, or under such other arrangement as they shall deem satisfactory. If, pursuant to their arrangement with the Agents, such non-participating railroads shall contribute to the payment for the properties local to their lines, they shall be reimbursed by the Agents, by the vesting in them of the ownership of such properties or by bonds, notes or debentures of the New Express Company. The Agents may require, as a condition of accepting such assignments that such non-participating railroads agree upon the form of operating contract, with the New Express Company to cover future operations or some other form which will be satisfactory to the Participating Railroads.

22. It is understood that the consummation of the Plan shall be subject, in such respect as shall be required by law, to the approval of appropriate public authority.

The report is signed by W. B. Storey, W. W. Atterbury, P. E. Crowley, Charles Donnelly, L. A. Downs, Carl R. Gray, E. J. Pearson, Bird M. Robinson.

Under the agreement to be signed by each railroad and the Railway Express Agency, the railroad reserves the right to transport property in carload shipments, in which event and unless and until such election shall be revoked, the railroad may move such carload shipments in its passenger, express or mail trains independently of the provisions of this agreement. The Rail Company also reserves the right to transport any property independently of this agreement by means of motor truck, aircraft or any other instrumentality than railroad train, and to perform in connection therewith the auxiliary service commonly known and referred to as pick up and delivery. The Express Company may engage by means of motor truck, aircraft or any other instrumentality than railroad train, in the transportation of property which would otherwise be transported on trains of the Rail Company, but only with the consent of the Rail Company and of all other carriers executing this form of agreement which would participate in such transportation if conducted by railroad; provided that any such consent may be withdrawn by not less than six months written notice; and provided further that as to any transportation by motor truck or aircraft conducted by the American Railway Express Company on February 28, 1929, the consent required shall be assumed unless and until such assumed consent shall be withdrawn or terminated by not less than six months written notice.

[The table of percentages of participation in express traffic for 86 railroads together with other data pertaining to the plan will be published in the *Railway Age* of July 28.]

Looking Backward

Fifty Years Ago

The Central Pacific [now part of the Southern Pacific] has reached an agreement with the Union Pacific, the North Western, the Burlington, the Rock Island and the Michigan Central for the hauling of not more than two cars per day of California fruit in passenger trains from Ogden, Utah, to New York.—*Chicago Railway Review,* July 20, 1878.

A decree of foreclosure has been issued by the United States circuit court against the Mobile & Ohio, ordering its sale at Mobile, Ala., on August 19. The main line, branches and side tracks aggregate 575 miles and the lands to be sold at the same time amount to over 1,000,000 acres.—*Railway Age,* July 18, 1878.

The change in the staff of the Maine Central within a few years is a good illustration of the great reduction that has been made on many lines in the interests of economy. Since 1875 on 355 miles of line the management has dispensed with the general manager, turning his duties over to the superintendent, the chief engineer and three assistant master mechanics. Two shops have been discontinued and concentrated at a third point. *Railroad Gazette,* July 19, 1878.

Twenty-Five Years Ago

The Michigan Central has filed suit against the State of Michigan for $6,000,000 damages alleged to have been sustained by reason of the repeal of its special charter. In addition to the damages it alleges for the value of the repealed charter, the railroad charges that it has sustained damages for increases in taxes, for the change in the method of imposing taxes, and for the reduction in the maximum passenger rate from three cents to two cents per mile.—*Railway Age,* July 24, 1903.

The St. Louis Southwestern has gained an entrance into Dallas, Tex., by the completion of an extension from Noell Junction to a connection with the Dallas Terminal Railway and Union Depot Company in the former city, about 12 miles. At the same time an agreement was negotiated with the Texas & Pacific for trackage rights from Ft. Worth to Dallas, giving the Cotton Belt entrance to Dallas from both east and west.—*Railway Age,* July 24, 1903.

Ten Years Ago

Wilfred P. Borland, assistant chief of the Bureau of Safety of the Interstate Commerce Commission, has been promoted to the position of chief of that bureau. Alonzo G. Pack, assistant chief inspector of locomotives for the Commission, has been promoted to the position of chief inspector.—*Railway Age,* July 24, 1918.

The United States Senate, on July 13, passed a joint resolution previously passed by the House of Representatives authorizing the President to take over and operate, telegraph, telephone, cable and radio lines for the period of the War. During the debate it was stated that only the trunk lines would be taken over. —*Railway Age,* July 19, 1918.

The first locomotive of the Railroad Administration's order of standard locomotives placed with the builders on April 30 was completed on July 1 by the Baldwin Locomotive Works. This locomotive is of the light Mikado type, specifications for which call for 55,000 lb. driving axle loads, and has been placed in service on the Baltimore & Ohio.—*Railway Age,* July 19, 1918.

Government operation of the railroads, for which a number of newspapers have been clamoring for some time as a means of preventing accidents has failed to remove them. Since January 1, five accidents on railroads in widely separated sections of the country resulted in the death of 187 and the injury of 180 persons.—*Railway Age,* July 19, 1918.

Communications and Books

Improper Replacement of Defective Draft Gears

Lawrenceville, Ill.

TO THE EDITOR:

For some time there have been appearing in the *Railway Age* and the Railway Mechanical Engineer articles dealing with draft gear maintenance. We do not believe there is a mechanical officer who would take issue regarding the advisability of properly maintaining draft gears and yet there is an increased tendency to substitute springs and followers in replacing defective gears. This practice cannot be other than wasteful in that it necessitates again withdrawing the car from service to correct these improper repairs, or subjects the car to abuse because this make-shift gear does not have the desired capacity.

We desire to commend you on your efforts to awaken interest in this important phase of car maintenance and to point out our own experience.

C. A. PORTER.
Traffic Manager,
Indian Refining Company.

What Is the Matter With Our Conventions?

TOLEDO, OHIO.

TO THE EDITOR:

I am one of the younger members of the railroad family and because of the fact that I am interested in making the most out of the job I have I find it necessary to keep up to date on the methods used by other railroads throughout the country in handling various jobs. For that reason I have made it a point to attend as many of the mechanical conventions as possible. With the exception of the meetings of the American Railway Association, Mechanical Division, I have at last been forced to arrive at the conclusion that in attending conventions I have wasted a great deal of time. What is the guiding force back of these conventions? Is it the men who belong to the respective branches represented; is it the railroads sending these men, or is it the supply companies who work with the railroads?

Where has the old-time discussion gone that used to be so prevalent at conventions? The general trend now in convention programs seems to be for a few speakers to address the convention either on subjects pertinent to them or, in some few cases, on a topic that is so foreign to modern operation that it fails to hold the interest of the men in attendance. I would not go so far as to say this is done in all cases from a selfish viewpoint, but when a man has been requested by a program committee to present a paper or make an address, the committee should assign a subject for him to deal with and in most cases allot to him a certain amount of time in which to present his paper. This is not always the case, and as conditions now exist, most of the conventions are being favored with a quantity of very flowery papers which do not lead to any intelligent discussion and of a character which might just as well not be published in the technical journals.

I have discussed this subject with a great many men while attending conventions and I do not believe that I am alone in the opinion I have expressed. What I would like to see at conventions is a well-organized, well-balanced program with topics of timely interest well prepared by capable men and handled in such a way that the discussion may be led by the chairman into channels which will contribute to bringing out valuable information relating to the practices on the different roads. In cases where a paper has been of such interest as to promptly excite general discussion, there is no need for organized discussion controlled by the chair, but in most cases this is necessary.

I do not like to feel that the topics being presented are too heavy for our men to discuss but I do feel that the way things are handled at most conventions, they are being hurried along in such a manner that real discussion is not invited.

The committees of all these organizations are doing wonderful work, but at best they can only represent a small number of railroads. It takes an expression from as many of the roads as possible really to prove the worth-while innovations. The railroads are sending us to the convention to bring something home. Are we getting it? I am not. Is it my fault or is it because of the way the various meetings are being handled?

K. E. ANDERSON.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Through the Khyber Pass by the North Western Railway. An illustrated booklet that all geography and most geology teachers will want to have, to say nothing of others. 8 folded p. Pub. by Publicity Dept., Indian State Railways, Delhi, India. *Apply.*

Petroleum Industry—Report on Prices, Profits and Competition, by U. S. Federal Trade Commission. "Importance and development of pipe lines," p. 33-41. "Transportation of refined products" pp. 42-45. 70th Cong., 1st sess. Senate Doc. no. 61. 360 p. Pub. by U. S. Govt. Print. Off., Washington, D. C.

Transportation and Communication. Addresses at the recent annual meeting of the Chamber of Commerce of the U. S. including "The Public, the Congress and the Interstate Commerce Commission" by Samuel O. Dunn, pp. 15-27 and "What Teamwork Means to Transportation and Communication", by Fred W. Sargent, pp. 56-59 p. Pub. by Chamber of Commerce of the U. S., Washington, D. C. *Apply.*

Fact-Finding in Labor Disputes, edited by Parker Thomas Moon. "The Supreme Court's Control Over The Issue of Injunctions in Labor Disputes" by Thomas Reed Powell, pp. 37-77 (railroads p. 69); and "Union-Management Cooperation in the Railroad Industry" by Otto S. Beyer, Jr., pp. 120-127 are two of the seventeen addresses in this volume issued as the June, 1928, Proceedings of the Academy. 194 p. Pub. by Academy of Political Science, New York City. $1.

Periodical Articles

An Analysis of the Causes and Results of Hand-To-Mouth Buying, by Fred E. Clark. "Of perhaps equal importance with increased production facilities is improved transportation and communication." p. 395. Harvard Business Review, July, 1928, p. 394-400.

Consolidation of Railroads and the Proposed Great Northern-Northern Pacific Unification. "Adapted from a thesis written for the course in Corporation Finance in the Graduate School of Business Administration, Harvard University . . .by John H. Lewis III." footnote p. 458. Harvard Business Review, July, 1928, p. 458-471.

Odds and Ends of Railroading

Railway men, particularly in the South, are the frequent recipients of political honors. The latest case is that of Engineman R. W. Carter, of the Illinois Central, who has been made a colonel on the staff of the governor of Mississippi.

A writer in the Chicago Tribune inquires as to whether Chicago's two universities were named after a prominent railway entering Chicago or whether the reverse is true. For those unfamiliar with Chicago, it might be mentioned that the two universities in question are Chicago and Northwestern.

Eight Thousand Trains on Time

The Union Pacific announces what is believed to be a world record for freight trains. Since December 20, 1925, that line has handled 8,000 fruit trains between Ogden, Utah, and Council Bluffs, Iowa, 993 miles, and not one of them has arrived behind schedule.

A New Railroad Job

Col. Charles A. Lindbergh has been appointed consulting aeronautical engineer for the Pennsylvania. This is a most unique "Personal" item, both because of the eminence and fame of the appointee and because this is the first railway job that ever dealt with aeronautics.

Woman Railroad Commissioner

Another occupation, hitherto regarded as exclusively masculine, has succumbed to the feminist trend of the times. Mrs. Robert L. Eaton has been elected to the Florida Railroad Commission, and the commission itself is the authority for the statement that she is the first woman to hold a position of the kind in the country.

Another Fish Story

The fish grow big down on the Gulf, Colorado & Santa Fe. Moreover, they catch them and then produce photographs to prove their story. Ollie Pederson, night enginehouse foreman at Brownwood, Tex., claims the world's catfish championship since last month, when he pulled a 63-pounder of that species from a bayou near Brownwood. Photographs furnished upon urgent request.

Save the Coupons

Twenty-six years ago, Frank Archer, then a fireman on the Northern Pacific, purchased at Fargo a $5 lunch coupon book for meals at Northern Pacific lunch rooms. Shortly thereafter he left the employ of the railroad and moved away. He now seeks a rebate. A few days ago, a letter was received at the general offices in St. Paul from Archer, who now lives at New Woodstock, N. Y. It said:

"Enclosed please find $5 luncheon coupon book No. 2182 issued by the Northern Pacific at Fargo, September 6, 1902, to Frank Archer and containing unused coupons amounting to $4.95. I left the service of the company as fireman about that date and I did not turn the book in. I have never been back that way since and I wondered if it would be asking too much to have the cash returned now."

On recommendation of A. W. Thomson, superintendent of the dining car department, under whose direction lunch counters in Northern Pacific stations are operated, a voucher in the sum of $4.95 has been mailed to Mr. Archer.

Engine-Driving Personality in England

In early railway days considerable interest was taken in the personalities of engine drivers, and on special occasions even the locomotive superintendent or his chief assistant not infrequently took charge of the footplate. Under modern conditions, however, it is only in exceptional circumstances that a chief locomotive officer acts even nominally as driver, though most of them have had driving experience, while the ordinary drivers, though they may be envied by youthful observers and may be regarded as people of great importance even by older travellers and onlookers, are but rarely known by name except to their colleagues and the staff of the department. Notable performances are, therefore, associated with the engines rather than with their crews; but during the last year or two the drivers of engines concerned in special runs have received public attention to a degree which suggests comparison with the pilots of racing motor cars and aeroplanes which have been engaged in breaking speed records or carrying out endurance tests. Thus, the driver and fireman of the Great Western locomotive, King George V, partly owing to their going to the United States with the engine, became relatively well-known, while the men concerned in the initial Euston-Carlisle nonstop runs of "The Royal Scot" express, L. M. S., received a good deal of public and newspaper notice. Similarly, the men who worked the inaugural King's Cross-Edinburgh non-stop runs, with others who will take turns on this duty, have become personalities so far as the public and the newspaper world are concerned.—Railway Gazette. (London).

A Moving Newspaper

A train daily newspaper to give passengers information they may desire to have at each stage of the two and a half day journey from Chicago to Los Angeles started its career on the Gold Coast Limited on the Union Pacific on July 2. It is a four-page illustrated paper of larger than tabloid size and is called "The Overland Mail." The first copy is delivered to the passenger the first morning out, at Omaha, the second the next morning in Western Wyoming and the final one at Yermo, Cal. The papers are all prepared in advance of the train's departure. Their "news" is correct information about the states, towns and other points of interest that are being passed. High lights of the colorful history of these western places and substantial facts concerning them abound in the papers. "The purpose," said W. S. Basinger, passenger traffic manager, "is not only to entertain the traveler but to spread real understanding of the West among its visitors." The paper is believed to be the first of its kind.

Railroading Ninety Years Ago

C. P. Leland, auditor of the Lake Shore & Michigan Southern, sent to the Railroad Gazette in 1878 this report of the Erie & Kalamazoo (now a part of the Michigan Central), copied from a Toledo (Ohio) newspaper of 1838:

Earnings, 1837	$55,821.52
Expenses, 1837	14,181.52
Profits	$41,610.00

"Profits equal to 16½ per cent on investment in a very blue year following the revulsion of 1836.

"The profits of the road have principally, if not entirely, accrued since the locomotive was put on, as the expense of running with horses, during the autumn of 1836 and the spring of 1837, was about equal to its earnings.

"If business shall revive with the opening of navigation next spring, and shall continue as prosperous as may reasonably be expected during next season, it is believed that the road will pay all expenses, and earn 50 per cent of its cost by the 31st of December next.

"(Note by compiler.—Business failed to revive and the earnings ran down from $55,821 in 1837 to $25,114 in 1842 when a receiver was appointed.)"

NEWS *of the* WEEK

Maine Central, No. 29, Leaving Portland, Me.

THE CITY OF LOS ANGELES, Calif., has asked the Supreme court of the District of Columbia for a writ of mandamus directing the Interstate Commerce Commission to issue an order requiring the railroads to construct the union passenger terminal at Los Angeles, in accordance with a certificate recently issued by the commission finding that public convenience and necessity require the construction but that it was without jurisdiction to order it. The case was set for hearing on August 6.

H. E. WILLS, for many years national legislative representative of the Brotherhood of Locomotive Engineers at Washington, who had been active in the affairs of the brotherhood for over fifty years, was given a testimonial dinner at Washington on July 16 in honor of his eightieth birthday. He retired from the position a year ago. Speakers at the dinner included R. H. Aishton, president of the American Railway Association and formerly president of the Chicago & Northwestern, J. J. Davis, Secretary of Labor, Senator Howell, of Nebraska, Representative Huddleston of Alabama, and several railway labor executives.

Hudson Bay 1928 Program

A total of $3,500,000 has been provided for expenditure during 1928 upon the lines of the Hudson Bay Railway according to an announcement of the Canadian Minister of Railways and Canals. Approximately 90 miles of new construction is planned for this year. In addition to this new construction the appropriation will be used for rehabilitation and maintenance.

New York Central Heroes

Within the last 15 months, 11 employees of the New York Central Lines—one woman and 10 men—have risked their lives to save the lives of other persons in peril, and at the general office of the New York Central in New York City on Friday of this week, President P. E. Crowley presented to these employees medals of valor, awarded by the board of directors. These employees are: Miss Jessie C. Knight, stenographer; James Ferrier, deckhand; Edwin S. Ballou, engineman; Thomas E. Corrigan, yardmaster; Melvin B. Truax, engineman; Daniel C. James fireman; William R. Stewart, brakeman; Henry Nauman, crossing watchman; John P. Dunne, trainmaster; William E. Mulherin, conductor and Louis E. Lounsbery, crossing watchman.

"All the Year—Every Year"

This is the salient point in the introduction to the latest circular from L. G. Bentley, chairman of the committee on education, of the Safety Section, A. R. A., which outlines the features of safety work that the committee recommends for special study and attention by railroad men during the month of August. Taking up casualties to employees on duty, attention is directed to two items: "shop machinery, stationary engines, cranes, etc.", and "locomotive cranes, steam shovels, pile drivers, etc.", statistics are quoted to show that in 1927 the total killed in the two classes was 30, (not greatly different from preceding years); but the reduction in the number of injuries was from 4,699 for the 12 months of 1923, to 1,614 in 1927. There are, however, still too many accidents in this class from preventable causes and the circular explains this point by three examples; (a) lifting devices, (b) operation of locomotive crane, and (c) injury by the chain of a drill press coming unhooked.

It is suggested that a copy of the circular be placed in the hands of every operator of a lifting device, with instructions that it should be read aloud to all employees who may be in position to benefit by its influence.

The Longest Train?

What is thought to be the longest train with the greatest number of cars ever operated by any railroad with one locomotive was run west out of Victoria, Va., on the Virginian for Roanoke on July 16. The train was Extra 800 West (engineman H. L. Wright, fireman E. P. Pinchbeck, conductor F. L. Meador, brakemen J. M. Bowler and G. C. Flint) and it had 201 cars, four of which were loaded, 4573 tons. The train proceeded to Roanoke (123 miles) without the assistance of a pusher engine in 7 hr. 35 min. including all delays, passing over the Stone mountain range of the Blue Ridge mountains, where there is a grade of 0.6 per cent. The train was 8482 ft. long, or more than a mile and a half. It was delayed 32 min. enroute meeting and allowing other trains to pass, with practically no delay to other trains. The train consisted of 189 empty coal cars, 8 empty box cars, 2 cars of gasoline, one car of steel and one car of asphalt.

The type of locomotive used is a 2-10-10-2 Mallet which is handling eastbound in loads from Roanoke to Victoria trains of 14,000 tons, averaging from 125 to 160 cars, and making the run in about 12 hours.

Harriman Medals for 1927

The American Museum of Safety announces that the E. H. Harriman memorial medals granted for conspicuous safety on American railroads, have been awarded for the year 1927, and that the presentation of the gold, silver and bronze medals and four certificates of honorable mention, will take place in New York City this Fall.

The committee awards the gold medal to the Union Pacific (not Union Pacific System); the silver medal to the Duluth & Iron Range and the bronze medal to the Texas-Mexican, these three roads being first in the several groups, the groups being classified according to miles run by locomotives. In the first group, honorable mention is accorded the Seaboard Air Line, and the Delaware, Lackawanna & Western; and in the second group, the Ann Arbor and the New Orleans & North Eastern.

The Union Pacific System took the gold medal in 1924, and again in 1925, and the committee calls attention to the fact that this road has one of the most active and efficient railroad safety organizations in the country.

Outing of the New York Railroad Club

The fifth annual outing of the New York Railroad Club was held on July

12, at Indian Point, on the Hudson river, with an attendance of about 700 railroad and supply men, and guests of the club. The Hudson Day line boat, "Peter Stuyvesant," left the pier shortly after noon from West Forty-second street, New York, and carried most of the members to the grove at Indian Point, while others went at 9 a. m. by motor coach to Briarcliff Lodge and Briar Hills Golf Links to participate in the annual golf tournament of the club, and later these members joined those at the grove.

Games were provided on the boat and a luncheon was served on the trip to the grove. Those who were on the outing marched, led by the Long Island Railroad Band, from the landing to the ball field, which was the scene of the games arranged, including quoits, baseball, obstacle races and running matches, field polo, push ball, and tennis. At the close of the contests the boat left the landing and proceeded north to Bear Mountain bridge before turning down the river on the return trip. This part of the program included the annual banquet and following this farther contests were held until the boat reached New York.

Grade Crossing Fatalities Reduced

Despite an increase of 5 per cent in the number of automobiles in operation in 1927 compared with the preceding year and an increase of 10 per cent in the number of fatalities due to the operation of motor vehicles on the highways, there was a decrease of 4 per cent in the number of persons killed as a result of highway grade crossing accidents. One fatality due to the operation of motor vehicles occurred on the highways for each 984 motor vehicles in operation, while there was one grade crossing fatality for each 11,716 automobiles.

Persons killed in highway grade crossing automobile accidents in 1927 totaled 1974, compared with 2,064 in 1926, a reduction of 90 or four per cent. The seven states with the greatest number of fatalities were:

	1927	1926
Ohio	251	230
Indiana	161	153
Illinois	160	186
New York	151	159
California	110	111
Pennsylvania	104	118
Michigan	104	110

The A. R. A. committee finds that there were 23,497 fatalities on the highways involving motor vehicles in 1927 as compared with 21,431 in 1926, or an increase of 10 per cent.

Changes in I.C.C. Organization

The recent appointment by the President of P. J. Farrell to the office of Interstate Commerce Commissioner rendered necessary a partial reorganization of the commission's Bureau of Law, as follows: Daniel W. Knowlton, senior assistant chief counsel, has been promoted to the office of chief counsel, succeeding Mr. Farrell, with jurisdiction over all the law business of the commission except that of the Bureau of Valuation. Charles W. Needham was placed in charge of the law business of the bureau of Valuation with the title of general solicitor of that bureau. Assistant Solicitor Oliver E. Sweet was made assistant general solicitor of the Bureau of Valuation. J. Stanley Payne was promoted from junior assistant chief counsel to the position of senior assistant chief counsel, and the position of junior assistant chief counsel was filled by the promotion of Senior Attorney Edward M. Reidy.

The commission also has announced the following changes in its personnel:

T. Leo Haden has been promoted from the position of chief clerk and purchasing agent in charge of the section of supplies and publications, Bureau of Administration, to the position of associate examiner, Bureau of Formal Cases. A. H. Laird has been promoted from senior clerk to purchasing agent in charge of the section of supplies and publications, and J. B. Switzer from appointment clerk and personnel officer to chief clerk and personnel officer.

Engineering Standards Committee Reorganized

A plan has been submitted to the member bodies of the American Engineering Standards Committee to change the name of this organization to the American Standards Association and to reorganize it in such a way that trade associations interested in standardization may more readily join this movement. This plan, which has been approved by the main committee of the American Engineering Standards Committee, is the result of an intensive study of the future organization of this work. Under the plan submitted, the approval of standards and other matters of procedure will be placed in the hands of a Standards council, which will be composed of not more than three representatives of each of the member bodies. While the new name indicates a broader scope of the work of this association, its work will be limited to those fields in which engineering methods apply.

The objects of the association, as stated in the new constitution, will be: To provide systematic means by which organizations engaged in industrial standardization work may co-operate in establishing American standards in those fields in which engineering methods apply, thus avoiding duplication of work and the promulgation of conflicting standards; to serve as a clearing house for information on standardization work in the United States and foreign countries; to further the industrial standardization movement as a means of advancing the national economy, and to promote a knowledge of, and the use of, approved American industrial and engineering standards, both in the United States and in foreign countries; and to act as the authoritative channel in international co-operation in standardization work, except in those fields adequately provided for by existing international organizations.

Freight House Beacons

The illustration shown herewith is that of the station of the Pennsylvania Railroad at McGees, Pa., on the Cresson division, the company having thus lettered

the roof of the building for the benefit of aviators.

At Shamokin, Pa., on the Sunbury division, an airport was opened recently, and in that enterprise, also, the railroad has participated, having the name "Shamokin" painted in five-foot letters on the roof of its freight house.

Pennsylvania Electrification Progress

The physical work of electrifying the main line of the Pennsylvania between Philadelphia, Pa., and Wilmington, Del., started more than two years ago, and the Octoraro branch between Philadelphia and West Chester, Pa., started in April 1927, has been progressing satisfactorily and according to schedule. As a result the company expects to inaugurate the electrical operation of commuting and local trains the latter part of September, coincident with the customary general change in timetables which places the fall and winter schedules in effect.

At the present time electrification work on the main line between Philadelphia and Wilmington is virtually completed and the first train of the multiple-unit cars has made an experimental run over part of this line. The current was turned into the circuits between Chester and Wilmington Wednesday, July 18. Later on electric trains will be substituted gradually for steam trains in local and commuting service until the change from steam to electrical operation is completely carried out by the latter part of September. Although electrification work on the Octoraro branch is not at the present time so far advanced, it is expected, however, to be ready for service at the same time. The power sub-stations and the new position light signals are nearing completion, the overhead structures along the right-of-way have been finished and the stringing of transmission and trolley wires has just been started.

The task of applying electrical equipment to 128 suburban coaches, started in the latter part of 1927, is rapidly approaching completion. A large number of these new multiple unit cars, completed within the last few months, are now being held in the new storage yard for electric cars, adjacent to the main

line tracks near Delaware Junction, just south of Wilmington, Del. This new yard, recently completed, covers six acres of land and provides, on its eight tracks, storage space for 140 suburban electric coaches.

The electrification of these two lines is an integral part of the Pennsylvania's plans for its new main Philadelphia passenger station on the west bank of the Schuylkill river, and the extension of electric suburban service into a centrally located underground terminal near the site of the present Broad Street Station.

Moffat Tunnel Assessments Protested

A suit to enjoin the Moffat Tunnel Commission from levying a special tax or assessment on property owners to pay the interest on $8,750,000 of bonds which were issued to finish the construction of the Moffat tunnel was filed in the United States District Court at Denver, Colo., on June 23, by the Denver Land Company, which is composed of a group of property owners in the tunnel assessment district. The complaint points out that the commission plans to collect $516,000 from real estate owners in the district during 1929 and that an extra levy of 1½ mills will be necessary to raise the amount. It charges that from March, 1925, to June, 1927, the commission attempted to levy special assessments aggregating $30,498,164, to be collected in equal annual installments from 1947 to 1956, from 1964 to 1973 and from 1974 to 1983 to provide for the payment of three supplemental bond issues which are declared to be "illegal, void, arbitrary and entirely beyond the expressed and statutory powers or any implied powers of the board."

To cover the original estimate of the cost of the Moffat tunnel the commission issued $6,720,000 of bonds on July 1, 1923. Later there were four additional issues of bonds, aggregating $10,250,000. Of the total bonds issued, about $15,470,000 have been sold.

On July 10 the tunnel commission filed a suit in the district court at Denver against the Denver & Salt Lake, asking that the railroad be required to pay $131,137 as rental for the use of the tunnel and damages due on June 1. An agreement between the railroad and the commission, executed on January 7, 1926, provides for the use of the tunnel by the railroad for a period of 50 years, the railroad assuming two-thirds of all interest and principal of $9,220,000 of bonds, plus annual maintenance charges of $12,000 and the interest and principal of an additional $1,000,000 of bonds. The yearly rental for the first 16 years of this obligation is about $346,000, payable semi-annually. The railroad contends that it is entitled to a rebate for work it was required to do to complete the tunnel construction.

At the same time the Public Utilities Commission of Colorado postponed to January 12, 1929, a hearing to determine whether passenger and freight rates on the Moffat tunnel route should be reduced following the reduction in grades and the shortening of the line.

The tunnel commission and the City of Denver have signed an agreement for the use of the pioneer bore of the Moffat tunnel as a water tunnel by the Denver Water Commission. The city will pay a rental of $1 per year and maintenance charges of about $50,000 per year in addition to lining this bore with concrete.

Final Valuation

Final valuation reports as of their respective valuation dates had been adopted by the Interstate Commerce Commission up to June 30 in 717 cases, involving 78,189 miles of railroad, out of a total of 1,081 cases with 244,165 miles. The cases involving 9 roads, with 239 miles of line, had been discontinued on account of the abandonment of the roads and there remained 352 cases, involving 165,737 miles, on which final reports had not yet been adopted.

June 30 marked the end of the three-year program under which appropriations for the commission's valuation work have been recommended by the House appropriations committee with the idea of completing the initial or primary valuation work. That date found three stages of the work, the field work, the preparation of underlying reports, and the issuance of tentative valuation reports entirely completed, and hearings had been completed in all except four proceedings, covering systems with 33,019 miles. These include the lines of the Baltimore & Ohio, Union Pacific, Chicago, Milwaukee & St. Paul, and Southern Pacific systems. These hearings were begun several months ago and the cases are now being handled under the conference plan. It is understood that they are so far advanced that they will be submitted to the commission on argument in the early fall.

Much of the work on the final reports in the 352 cases in which final reports have not yet been adopted is also far advanced. Reports have been written by examiners in approximately half of them and work is in progress on all of the others on which hearings have been concluded.

When the three-year program was begun the field work had been substantially completed and 641 tentative valuations covering 104,248 miles had been completed. Hearings had been completed in only 182 cases. Final reports had been issued in 26 contested cases, covering 4,579 miles, and in 150 cases, covering 4,461 miles, reports had been made final through default of protest within the 30-day period prescribed by the statute.

LUMBER.—Important publications available containing information of interest to the users of lumber, are listed in the second edition of the National Lumber Handbook, a 19-page booklet issued by the National Lumber Manufacturers' Association, Washington, D. C. The handbook also contains a list of the associations and governmental agencies which maintain information service on lumber, and gives a brief description of their activities.

Traffic

The Northwest Shippers Advisory Board will hold its twenty-fourth formal meeting at Fargo, N. D., on July 24.

The Kansas City Southern has established a 24-hr. train, the Flying Crow, between Kansas City, Mo., and Port Arthur, Tex. The train leaves Kansas City at 6:30 p.m. and arrives at Port Arthur at 6:30 p.m. the following day. Returning it leaves Port Arthur at 4:10 p.m. and arrives in Kansas City at 4:00 p.m. Observation sleeping cars between Denver, Colo., and Shreveport, La., are run over the Union Pacific via Kansas City, Mo.

A study of the relation of traffic departments to the conduct of modern business has been undertaken by the Transportation Division of the Department of Commerce, at the instance of the Associated Traffic Clubs of America, who have volunteered to co-operate in the work. Wayne E. Butterbaugh, professor of transportation at the University of Minnesota, has been engaged to conduct the study, under the direction of Norman F. Titus, director of the Transportation Division; and a report is expected early in 1929.

The Southern Pacific, effective July 26, will shorten the running time of its Shasta (Train No. 11) between Portland, Ore., and San Francisco, Cal., 30 minutes. The train will leave Portland at 8:00 a.m. instead of 8:30. Returning it will leave San Francisco at 7:00 p.m. and will arrive in Portland at 9:10 p.m. The schedule of the West Coast will also be shortened 30 minutes.

The hearings which opened at Seattle, Wash., on May 24 in the Interstate Commerce Commission investigation of rates on grain and grain products were concluded on July 6 and were reopened at Portland, Ore., on July 9. At the opening of the hearing at Portland, W. P. Ellis, attorney for the Oregon Public Service Commission, requested a 50 per cent reduction in grain rates to Portland and intimated that the Oregon Public Service Commission would ask for an extension of the territory in which the present Columbia basin differential is effective.

The Interstate Commerce Commission has employed Luther M. Walter, of Chicago, Ill., as special counsel to handle on its behalf the appeal to the United States Supreme Court from the decision of the United States district court, southern district of West Virginia, in Anchor Coal Company, et al. vs. United States of America, et al., and Interstate Commerce Commission, intervening defendant, commonly known as the Lake Cargo Coal Case.

The executive committee of the Atlantic States Shippers' Advisory Board

met in Atlantic City, N. J., on July 13, and surveyed the reports of the commodity committees containing estimates of probable freight traffic during the current quarter. The net estimate of the volume of traffic is about three per cent above last year. Among the industries expecting increases are: automobiles, etc., brick, cement, canned food, fertilizer, lime, paints, paper and petroleum. Slight decreases are anticipated in hides and leather, iron and steel, lumber, salt and sugar.

21-Car Train Used in Templar Movement

A total of 33 special trains carrying over 5,000 passengers to the national grand encampment of the Knights Templars at Detroit, Mich., were moved over the Michigan Central, the New York Central, the Baltimore & Ohio, the Wabash, the Grand Trunk, and the Pere Marquette from Chicago on July 15 and 16. Of these the N. Y. C. and the Michigan Central moved 18 trains; the B. & O., 2; the Wabash, 5; the Grand Trunk, 6; and the P. M. 2.

The Chicago, Burlington & Quincy and the Michigan Central handled the grand master's special train of 21 cars and 400 passengers from Denver, Colo., previous to the movement of July 15 and 16. This train consisted of one baggage car, sixteen 12-section sleeping cars, 3 dining cars and one lounge car and was hauled by two locomotives. The B. & O. handled one of the commanderies of Chicago on a pre-convention tour which left Chicago on July 3 by way of Washington, New York, Boston, Mass., Montreal, Que., and Detroit. Many of the specials will continue from Detroit on tours through the East.

Fourth Section Relief on Eastbound Rates

The Interstate Commerce Commission has issued a fourth section order on various applications filed by the western transcontinental railroads and their eastern connections granting authority to establish or continue rates on lumber and on classes and commodities generally, from Pacific coast origin groups and intermediate territory to defined territories lying, roughly speaking, east of the Rocky mountains, lower than are observed at intermediate destinations. This is to enable the carriers to route traffic through higher rated groups to lower rated groups. Commissioner Campbell dissented, saying that the situation should be cared for by a re-grouping.

The relief is granted on condition that rates to intermediate points shall not exceed rates in effect over other routes to the same points in higher rated intermediate groups; that the rates to the intermediate points shall not be increased except as may be authorized by the commission and shall not exceed the lowest combination; and that the order shall not apply in connection with rates applicable in No. 12,383 where over routes that are more than 45 per cent circuitous.

Rates to Lake Erie on Cargo Coal

Freight rates on coal from Pennsylvania, Ohio and West Virginia, to ports on Lake Erie, which have been the subject of negotiation and controversy for many months (See *Railway Age*, June 23, page 1461) were the subject of a conference at New York City on July 6, at which it is said that an agreement was reached to the effect that a differential of 35 cents a ton, between the rates from the northern and southern bituminous fields, should be assented to by all the roads; but it does not appear that any tariffs have been filed, and it is understood that the agreement will not go into effect until the end of 1928. The present tariffs, under which the northern roads made a reduction of 20 cents in the rates to meet the reduction made by the southern roads and thus to restore the 45-cent differential will expire on December 31; and it is understood that if the suit now pending before the Supreme Court of the United States shall not have been decided by that time, a date farther in the future will be set by the railroads.

Any new tariffs would, of course, be subject to suspension by the Interstate Commerce Commission; and the position of the commission, as indicated by the decisions which it has made, is that the differential should be 45 cents.

New Southwestern Rates in Effect

The Interstate Commerce Commission's comprehensive revision of class rates and many commodity rates in the Southwest, based largely on mileage scales, as prescribed in the commission's order in the Consolidated Southwestern Cases dated April 5, 1927, but with many modifications, became effective on July 14, after the United States district court for the eastern district of Missouri on July 12 had declined to issue an injunction asked for by southern shippers who had objected to the rates between points in the Southeast and the Southwest. The rates were originally ordered effective on December 5, 1927, but after many requests for reconsideration and postponement the date was changed to July 8. By that time the commission had refused to order a further postponement, although it had re-opened certain parts of the proceeding, and had suspended many provisions of the tariffs filed by the railways to comply with the decision.

The southern roads had asked the commission to suspend their part of the tariffs. A further postponement for one week, to July 14 was ordered, however, after the suit for an injunction was instituted by the southern shippers.

The commission on July 13 made public two additional orders in the Consolidated Southwestern cases, directing the railroad and steamship defendants to file by September 15 specific information concerning the movement of commodities embraced in the proceedings received by them at Texas ports.

Equipment and Supplies

Locomotives

CENTRAL VERMONT—See Canadian National.

THE CANADIAN NATIONAL has ordered eight 2-10-4 type locomotives from the American Locomotive Company, for service on the section of the Central Vermont north of Point River Junction, Vt., to the Canadian border. These locomotives will weigh 415,000 lb., and with tender will have a total weight of 682,500 lbs. The length of locomotive and tender will be 83 ft. They will have a tractive effort of 72,500 lb. without booster and 86,000 lb. with booster. Inquiry for this equipment was reported in the *Railway Age* of June 23.

Freight Cars

THE CITIES SERVICE COMPANY is inquiring for 10 tank cars of 12,000 gal. capacity.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered 150 box cars from the Gregg Company.

THE AMERICAN OIL COMPANY, Baltimore, Md., has ordered 1 two-compartment tank car of 4,500 gal. capacity from the General American Tank Car Corporation.

THE AMERICAN CYANAMID COMPANY, New York, has ordered 25 covered hopper cars of 70 tons' capacity, from the General American Car Company. Inquiry for this equipment was reported in the *Railway Age* of July 14.

THE UNITED STATES NAVY DEPARTMENT, Bureau of Aeronautics, has ordered one tank car for carrying Helium gas, from the General American Tank Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of June 19.

Passenger Cars

THE PENNSYLVANIA is now inquiring for upwards of 500 express refrigerator cars.

Iron and Steel

THE NORFOLK & WESTERN will ask for bids on 40,000 tons of 130-lb. rail.

THE NEW YORK CENTRAL is inquiring for 230 tons of steel for a bridge at Nepperhan, N. Y.

THE BALTIMORE & OHIO has ordered 250 tons of steel for bridges, from the American Bridge Company.

THE UNION PACIFIC is inquiring for 500 tons of structural steel for an addition to its office building at Omaha, Neb.

THE TEXAS & PACIFIC is inquiring for 4,200 tons of structural steel for the construction of a bridge at Melville, La.

THE BOSTON & MAINE has ordered 400 tons of bridge steel from the Boston Bridge Works, and is inquiring for 2,500 tons for various bridges.

THE PENNSYLVANIA is inquiring for 400 tons of bridge steel, and has placed an order with the Belmont Iron Works for 500 tons of steel for a warehouse, at Jersey City, N. J.

THE NORTHERN PACIFIC has ordered 15,000 tons of rails from the Illinois Steel Company and 10,000 tons from the Bethlehem Steel Corporation.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 1800 tons of steel for a produce terminal at Providence, R. I.

THE ST. JOHNSBURY & LAKE CHAMPLAIN has ordered 275 tons of steel from the American Bridge Company for bridges at Hardwick and Walcott, Vt.

THE PENNSYLVANIA has ordered 108 tons of steel for bridges at Reelsville, and Logansport, Ind., from the American Bridge Company. An order has also been given to the American Bridge Company for 285 tons of steel for a bridge at Camden, Ind., and bids have been received for 300 tons for a bridge at Joyce, Ohio.

Signaling

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for automatic block signals—position light type—between Rochester, Pa., and Baird, Ohio, double track, 60 miles.

THE CANADIAN PACIFIC has ordered from the General Railway Signal Company, signal material needed in connection with a third track to be built in Montreal between Windsor street and Glen Yard; a Model 5 electric interlocking, form A, with 53 working levers; 20 switch machines, 32 color-light signals and other material.

Centralized Dispatching on Boston & Maine

The Boston & Maine has ordered from the General Railway Signal Company material for the introduction of the G. R. S. centralized traffic control on the line from Ayer, Mass., eastward to North Chelmsford, Mass., (near Lowell) 13 miles. This branch, formerly the Stony Brook Railroad, forms a part of the route of the State of Maine Express between New York City and Portland.

This line is double track and is to be equipped with automatic signals for movement in both directions on either track. There is a middle siding which is to be operated from North Chelmsford, four miles distant; also the entering signals at Ayer are controlled from the same office. Signals will be Type D, color-light, and the intermediate automatic signals will be mounted on bridges, each bridge carrying both eastbound and westbound signals.

The control machine at North Chelmsford is the standard dispatching machine, but without a recorder.

Supply Trade

Wallace R. Lynn, San Francisco, Cal., has been appointed Pacific Coast representative to handle the automotive electrical and radio lines of the **Belden Manufacturing Company,** Chicago.

The Pittsburgh Testing Laboratory has opened an office in Boston, Mass., at 101 Tremont street, in charge of **Donald L. Macdonald.** Mr. Macdonald was formerly connected with the engineering department of Stone & Webster.

Kenneth M. Bailey, has been appointed technical sales representative, with headquarters in the N. O. Bank building, New Orleans, La., of the **Curtin-Howe Corporation,** wood preservation engineers, New York.

Maurice N. Trainer and **Edward Barrett Smith** have been appointed assistant vice-presidents of the **American Brake Shoe & Foundry Company,** New York, reporting to William S. McGowan, vice-president in charge of eastern and southern sales department.

D. S. Mair, manager of the Houston, Tex., office of Joseph T. Ryerson & Sons, Inc., has resigned to organize the **D. S. Mair Machine Company,** Houston. He will handle the sales of the bolt and pipe threading machines and the taps of the Landis Machine Company and the machine tools of the Ryerson Company.

Grant B. Shipley, engineer of Pittsburgh, Pa., has been elected a director of the **Mond Nickel Company, Ltd.,** of England and Canada. For some time Mr. Shipley has been chairman of the board and president of the American Mond Nickel Company, the United States branch of the Mond Nickel Company, Ltd. Mr. Shipley is also president of the Century Wood Preserving Company, Pittsburgh.

William H. East has joined the sales organization of **The Pyle-National Company** as a sales engineer, with headquarters in the Straus building, Chicago. Mr. East graduated as an electrical engineer, in the class of 1907, from the University of Missouri. He then entered the service of the Westinghouse Electric Company, and in 1907 went with the Union Traction Company, Anderson, Ind., as an electrician, later being appointed division electrician. In 1913 he served in the electrical department of the Chicago, Burlington & Quincy, at Chicago, and in 1917 was appointed assistant electrical engineer, resigning in 1925, to join the Central States Electric Company as a sales engineer, which position he held until his recent appointment with the Pyle-National Company.

Charles L. Hacket, for many years associated with the **General Railway Signal Company,** has been appointed resident manager at Montreal, Quebec, with jurisdiction over central and eastern Canada. Mr. Hacket was born in Warwickshire, England. In 1887, at the age of 14, he went to Virginia and two years later entered the service of the New York and Cuba Mail Line in its engineering department. In 1891 he served as fireman on the Chicago, Burlington & Quincy and shortly after he became a maintainer on hydro-pneumatic interlockings on the same road. In 1892 he entered the field of construction work for the Union Switch & Signal Company. He later went to England, joining the British Army, serving through the Boer War. After the termination of the war, Mr. Hacket went to Washington, D. C., to serve as foreman of signals on the Southern Railway. He subsequently returned to the Union Switch & Signal Company as Canadian representative in Montreal and two years later went to the General Railway Signal Company as its Canadian representative in Montreal and Winnipeg. He was given a leave of absence to serve during the World War in France and Egypt until 1921, when he retired with the rank of major. He was then in Africa until 1925 when he returned to Canada to become vice-president of the General Railway Signal Company of Canada, Itd. Later, Mr. Hacket was transferred to the Metropolitan-Vickers GRS Ltd., in London, and about one year later returned to the company's home office in Rochester, N. Y., where he served until his recent appointment as resident manager at Montreal.

Charles L. Hacket

Obituary

Phillip F. Walkley, assistant treasurer of the American Locomotive Company, New York, died at the age of 43, on July 15, in the Morningside hospital, Montclair, N. J., from the effects of injuries received in an automobile accident one week previous. Mr. Walkley entered the service of the American Locomotive Company in January, 1903, as an office boy and subsequently held various positions until September, 1918, when he was elected assistant treasurer.

Construction

ALGOMA CENTRAL & HUDSON BAY.—A contract has been let to Angus and Taylor, North Bay, Ont., for the grading in connection with the realinement of about three miles of line between Frater, Ont., and Canyon. This project involves the excavation of about 10,000 cu. yd. of rock and 48,000 cu. yd. of other material. Track laying and ballasting will be undertaken by company forces. The total expenditure will be about $110,000. This company plans the construction of a 100-ton coaling station at Hawk Junction, Ont.

CANADIAN NATIONAL.—A contract has been awarded by this road to the R. C. Huffman Construction Company, Toronto, Ont., for grading and concrete bridge work in connection with the construction of new passenger station facilities at Hamilton, Ont. A second contract was awarded to the Canadian Dredging Company of Midland, Ont., for suction dredging for land reclamation in connection with new engine facilities which are planned at Charlottetown, P. E. I. The road also plans to construct new baggage and express facilities at St. John, N. B.

CANADIAN PACIFIC.—A contract has been let to W. A. Dutton, Winnipeg, Man., for the grading of an extension between Willingdon, Alta., and Strathcona, 70 miles. A contract for the grading of 13 miles of line which will be constructed northwest of Raley, Alta., has been awarded Stewart and Cameron, Winnipeg. This same contractor has been awarded a contract for the grading of an extension of the Lacombe & Northwestern from Breton, Alta., to a point 20 miles northeast.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Railroad Water & Coal Handling Company, Chicago, for the construction of 5,000-barrel fuel oil stations at Tucumcari, N. M., and Dalhart, Tex., and for the construction of a fuel oil station with 40,000-gal. storage capacity at Amarillo, Tex. A contract has been let to Joseph E. Nelson & Sons, Chicago, for the construction of fuel oil stations at Herington, Kans., and Pratt. A contract for the construction of a fuel oil station at Liberal, Kans., has been awarded to the F. W. Miller Heating Company, Chicago. A contract has been awarded to Joseph E. Nelson & Sons for the construction of a water treating plant at El Reno, Okla., which will have a capacity of 42,000-gal. per hour and a contract for the construction of a water treating plant with a capacity of 1,000-gal. per minute and a concrete storage sump at Dalhart, has been awarded to the Railroad Water & Coal Handling Company. This same company has been awarded a contract for the construction of a 200-ton automatic electric coaling station at Estherville, Iowa.

CITY OF CHICAGO.—The city council has adopted an ordinance providing for the elevation of four miles of track between Sixty-ninth and Eighty-seventh streets and between South Wood street and Columbus avenue, Chicago. The former line, a north and south right-of-way, about 2.5 miles long, is used by the Baltimore & Ohio Chicago Terminal, the Pennsylvania and the Baltimore & Ohio and street subways will be constructed at Seventy-first, Seventy-third, Seventy-fifth, Seventy-ninth and Eighty-third streets. The latter portion of the elevation will be over a distance of about 1.5 miles on an east and west right-of-way used by the Chicago & Western Indiana, the Belt Railway of Chicago and the Wabash. Subways will be constructed at Oakley boulevard, Columbus avenue and Robey street on this line. The total cost of the project is estimated at $5,000,000. If the ordinance is accepted by the four railroads that are owners of the rights-of-way, the B. & O. C. T., the Pennsylvania, the C. & W. I. and the Wabash, it is expected that construction will be undertaken in the Spring of 1929.

IMPERIAL.—This company, organized by lumbering and farming interests, has applied to the Interstate Commerce Commission for a certificate authorizing the construction of lines from Mendenhall to Zama, Miss., via Carthage, from Carthage to Canton and Pelahatchie, Miss., and from Carthage to Birmingham, Ala., a total of about 150 miles. The applicant's plan of financing contemplates the sale of stock to lumber and land companies. The application is signed by S. J. Mann, secretary, and M. J. Mann, Decatur, Miss., is counsel.

NEW YORK CENTRAL.—Bids are being received by this company for the construction of a grain elevator at Weehawken, N. J. This road also closed bids on July 17 for work in connection with the elimination of a grade crossing on its Putnam division in Yonkers.

NEW YORK, CHICAGO & ST. LOUIS.—A contract for the construction of a three-story passenger station at South Bend, Ind., which will be used by this company and the New York Central has been awarded to the Walsh Construction Company, Davenport, Iowa, at a cost of about $500,000. The building, which will be constructed of reinforced concrete, brick, steel and stone, will have outside dimensions of 85 ft. by 180 ft.

PENNSYLVANIA. — Contracts involving approximately $817,000 have recently been awarded by this road. The largest of the group involves an expenditure of approximately $600,000 for work in connection with grade reductions and revisions of line at Adenmoor, Ill., and Griffith, Ill. This went to the Mellon Construction Company, Pittsburgh, Pa. A second contract, involving about $120,000, for grading and track work in connection with the construction of the 43rd Street subway, Chicago, Ill., was awarded to the S. & M. Contracting Co., Inc., Chicago. Hoeffer & Co., Chicago, received the contract for masonry and street excavation work to cost about $45,000 in connection with this subway construction. A fourth contract for the construction of an overhead bridge on Lake street, Ashtabula, Ohio, was let to the Rust Engineering Company, Pittsburgh, Pa. This is expected to cost approximately $52,000.

PENNSYLVANIA.—The director of highways of Ohio has ordered the preparation of plans for the construction of a highway subway under the tracks of this company on State Route No. 14, three miles northwest of Salem, Ohio.

RUTLAND.—This road has awarded a contract to the McClintic-Marshall Co., Boston, Mass., for the manufacture and erection of the superstructure of its new bridge over the Winooski river at Burlington, Vt. This work is expected to cost about $85,000.

SOUTHERN PACIFIC (Pacific Lines).—A contract for the reconstruction of the Portland Flour Mills at Portland, Ore., for use as a grain elevator with a capacity of about 1,000,000 bu. has been let to the Gilpin Construction Company, Portland, at a cost of approximately $100,000.

SOUTHERN PACIFIC. — This company plans the immediate construction of a line between Klamath Falls, Ore., and Alturas, Cal., 97 miles, to connect the Cascade route of its San Francisco-Portland line with the Nevada-California-Oregon. The new line will extend southeasterly from Klamath Falls to Merrill, Ore., across Tule Lake, which has been drained, through Cornell, Cal., and easterly to Alturas. It will provide access to an agricultural territory south of Klamath Falls in the Klamath Basin and a large stand of virgin pine timber in the same vicinity.

TERMINAL RAILROAD ASSOCIATION. — The general contract for the enlargement and improvement of the St. Louis (Mo.) Union station and its facilities at a cost of about $4,000,000 has been let to Dwight P. Robinson & Co., New York. The Association and the city have reached a tentative agreement for the vacation of Twentieth street, south of Market street, in return for the dedication to public use of a similar strip of land and the contribution of $150,000 toward the cost of constructing a viaduct to carry Clark avenue over the new station train sheds. This agreement, when formally signed by the city and the Association, will answer the earlier refusal of the Board of Public Service to grant a permit for this construction. A permit has been granted by the city for the construction of an $850,000 express warehouse and office building, which will have a four-story wing with outside dimensions of 220 ft. by 70 ft. and a two-story wing with outside dimensions of 700 ft by 70 ft.

TORONTO TERMINALS.—This company has awarded a contract to P. Lyall and Sons Construction Company, Montreal, Que., for the construction of a four-story express and office building for the use of the express department of the Canadian National at Toronto, Ont. Outside dimensions of this building will be 696 ft. by 55 ft.

Financial

BALTIMORE & OHIO.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a fork of its Turner branch in Kanawha county, W. Va., 1.61 miles.

BALTIMORE & OHIO.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a part of its Millersburg branch, from a point near South Wooster to Millersburg, Ohio, 16.8 miles, on the ground that there is no prospect of present or future development to justify continued operation.

CHICAGO & ALTON.—*Use of T. P. & W. Tracks required by I. C. C.*—The Interstate Commerce Commission on July 13 made public a decision by a 5 to 4 vote finding that public interest requires the continued operation of freight trains of the Alton over main-line tracks of the Toledo, Peoria & Western for about 12 miles between Washington and Peoria, Ill., for which the T. P. & W. had sought to cancel the lease. The commission, however, expressed no opinion as to the adequacy of the rental or the propriety of the other terms and conditions under which the Alton is operating over the tracks. Commissioners Eastman, Farrell, Brainerd and Aitchison dissented and Commissioners Meyer and Woodlock did not participate. On May 16, 1927, the T. P. & W. notified the Alton of its election to cancel the agreement of 1895, in accordance with the terms of the decree under which the property of the T. P. & W. was sold at foreclosure, but later it offered to renew the agreement at a rental deemed excessive by the Alton. The receivers of the latter then filed a complaint with the commission asking it to exercise its authority and authorize the continued use of the tracks upon such terms as it might find reasonable. On August 9, 1927, the commission issued a service order directing the T. P. & W. to permit the continued operation of Alton trains over its tracks until further order. The service order is now cancelled as being no longer necessary. The commission finds that it has power under paragraph 4 of section 3 of the interstate commerce act to require use of the tracks by the Alton and that the discontinuance of such operation without its authority may be prevented by injunction.

CHICAGO, ATTICA & SOUTHERN.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue and reissue $10,000 of promissory notes and to pledge and repledge $44,000 of its first refunding mortgage bonds as security therefor.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trusts.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $2,535,000 of series E, $4,920,000 of series F, $871 of series G, and $585,000 of series H equipment trusts to be issued by the Bank of North America & Trust Co., at not less than 97.55 and accrued dividends.

CHICAGO & NORTH WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to procure the authentication and delivery of $28,456,000 of first and refunding mortgage bonds, under its mortgage of May 1, 1920, to reimburse the treasury in part for capital expenditures during the years 1926 and 1927.

CHICAGO, SPRINGFIELD & ST. LOUIS.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $250,000 of first and prior lien mortgage 6 per cent bonds, $1,500,000 of first equipment and refunding mortgage 6 per cent bonds, 27,500 shares of common stock of a par value of $5 a share, and 16,500 shares of preferred stock of $100 par value. The securities are to be used in part as consideration for the acquisition of the Jacksonville & Havana, for the purchase of equipment and for the reconstruction of the two roads.

CINCINNATI UNION TERMINAL COMPANY.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue $3,500,000 of common stock to be sold at par in equal shares to the Baltimore & Ohio, the Cincinnati, New Orleans & Texas Pacific, the Cleveland, Cincinnati, Chicago & St. Louis, the Louisville & Nashville, the Norfolk & Western and the Pennsylvania, the proceeds to be used in connection with the purchase of property and the construction of the new union passenger terminal.

GEORGIA & FLORIDA.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,000,000 of first mortgage bonds, instead of $807,000 as authorized by the commission, on the ground that its Greenwood extension will cost $3,102,356, or $171,218 more than was estimated.

GOSHEN & DECKERTOWN.—*Mortgage Extended.*—The Interstate Commerce Commission has authorized this company to extend from July 1, 1928, to July 1, 1978, the maturity of $186,500 of its first mortgage bonds. These bonds were originally issued in 1869 at 7 per cent, maturing in 1888. Maturity was extended to 1928 with interest at 6 per cent. Under the present extension, the interest rate will be 5½ per cent with a privilege of redemption on 30 days notice after 1938 at 107½. The National Bank of Goshen, N. Y., will take over at par bonds from holders who do not desire the extension. The road is operated under lease by the Erie.

HOUSTON, TEX.—*Terminal Facilities.*—The railroads serving this city have applied to the Interstate Commerce Commission for authority to acquire control of, and to extend their operations over, the terminal facilities serving the Houston ship channel under a contract dated June 30, 1924, effective July 1, 1924. The applicant railroads say they entered into the contract in the belief that no authorization was necessary but that, as doubt has arisen, they have filed the application for the purpose of obtaining whatever authorization, if any, is requisite.

INTERNATIONAL GREAT NORTHERN.—*Bonds.*—The Interstate Commerce Commission in a supplemental order has authorized this company to utilize $671,878 of its first mortgage gold bonds, series C, to reimburse its treasury for expenditures not contemplated in the order, entered January 26, authorizing an issue of $5,518,000 of this security.

LONG ISLAND.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell to the Pennsylvania at par $5,889,750 of common stock, the proceeds to be used to pay off part of the company's indebtedness to the Pennsylvania, which owns 99.92 per cent of its stock.

NEW ORLEANS, TEXAS & MEXICO.—*Bonds.*—By a second supplemental order the Interstate Commerce Commission has authorized this company to utilize $1,558,710 of its 4½ per cent bonds, series D to reimburse its treasury for expenditures for improvements other than those contemplated in a previous supplemental order, entered January 26, authorizing an issue of $5,989,000 of this security.

NEW YORK CENTRAL.—*Stock Issue Approved.*—Division 4 of the Interstate Commerce Commission has authorized this company to issue $42,158,300 of stock to be offered to stockholders at par, on the basis of one share for each ten shares held. The proceeds are to be used to provide in part for the retirement at maturity of $50,000,000 of Lake Shore & Michigan Southern 25-year 4 per cent bonds maturing September 1. Commissioner Eastman, concurring in part, expressed disapproval of the proposal to issue the stock at par, saying that as stock of the company is selling in the market at about $170 per share it is clear that the new issue can without difficulty be sold at a price substantially in excess of par.

PENNSYLVANIA.—*Acquisition of Baltimore & Eastern.*—The Interstate Commerce Commission has authorized the former company to acquire control of the latter by purchase of capital stock. The stock of the latter company is owned by the Baltimore, Chesapeake & Atlantic, practically all stock of which is owned by the Pennsylvania. The consideration to be paid by the Pennsylvania for the Baltimore & Eastern stock will be $1.

PENNSYLVANIA.—*Equipment Trust Redemption.*—This company called for re-

(*Continued on page 130*)

Annual Report

The Cleveland, Cincinnati, Chicago & St. Louis Railway Company

To the Stockholders of

THE CLEVELAND CINCINNATI CHICAGO AND ST. LOUIS RAILWAY COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1927, with statements showing the income account and the financial condition of the company.

The Year's Business

The company moved 45,595,841 tons of revenue freight during the year, a decrease of 1,159,034 tons as compared with 1926, largely the result of conditions affecting the bituminous coal and the coke industry.

Revenue passengers carried were 4,048,397, a decrease of 398,521, of which 67,882 were interline, 211,603 local and 119,036 commutation.

Income Account for the Year

	Year ended Dec. 31, 1927 2,396.52 *miles operated*	Year ended Dec. 31, 1926 2,397.32 *miles operated*	Increase or Decrease .80 *mile*
OPERATING INCOME			
RAILWAY OPERATIONS			
Railway operating revenues	$91,185,736.88	$94,539,987.16	—$3,354,250.28
Railway operating expenses	70,322,698.77	70,058,664.78	264,033.99
NET REVENUE FROM RAILWAY OPERATIONS	$20,863,038.11	$24,481,322.38	—$3,618,284.27
Percentage of expenses to revenues	(77.12)	(74.10)	(3.02)
Railway tax accruals	$5,047,015.35	$5,384,906.29	— $337,890.94
Uncollectible railway revenues	15,462.22	29,700.22	— 14,238.00
RAILWAY OPERATING INCOME	$15,800,560.54	$19,066,715.87	—$3,266,155.33
Equipment rents, net debit	$501,462.05	$47,960.39	$453,501.66
Joint facility rents, net debit	696,031.59	491,509.76	204,521.83
NET RAILWAY OPERATING INCOME	$14,603,066.90	$18,527,245.72	—$3,924,178.82
MISCELLANEOUS OPERATIONS			
Revenues	$10,725.49	$12,117.26	— $1,391.77
Expenses and taxes	16,395.03	15,705.50	689.53
MISCELLANEOUS OPERATING DEFICIT	$5,669.54	$3,588.24	$2,081.30
TOTAL OPERATING INCOME	$14,597,397.36	$18,523,657.48	—$3,926,260.12
NON-OPERATING INCOME			
Miscellaneous rent income	$284,566.30	$289,470.57	— $4,904.27
Miscellaneous non-operating physical property	174,027.41	183,366.05	— 9,338.64
Dividend income	1,485,308.90	312,643.90	1,172,665.00
Income from funded securities	436,217.47	409,411.06	26,806.41
Income from unfunded securities and accounts	307,070.13	272,241.72	34,828.41
Release of premiums on funded debt	379.80	536.85	— 157.05
Miscellaneous income	27,245.39	22,394.10	4,851.29
TOTAL NON-OPERATING INCOME	$2,714,815.40	$1,490,064.25	$1,224,751.15
GROSS INCOME	$17,312,212.76	$20,013,721.73	—$2,701,508.97
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$583,318.13	$552,258.58	$31,059.55
Miscellaneous rents	198,875.38	209,310.80	— 10,435.42
Miscellaneous tax accruals	27,000.00	25,000.00	2,000.00
Separately operated properties—loss	668.22	17,445.68*	18,113.90
Interest on funded debt	7,426,958.83	7,484,067.92	— 57,109.09
Interest on unfunded debt	22,169.79	76,342.11	— 54,172.32
Amortization of discount on funded debt	259,578.42	269,143.81	— 9,565.39
Maintenance of investment organization	831.99	744.32	87.67
Miscellaneous income charges	17,429.69	19,016.48	— 1,586.79
TOTAL DEDUCTIONS FROM GROSS INCOME	$8,536,830.45	$8,618,438.34	— $81,607.89
NET INCOME	$8,775,382.31	$11,395,283.39	—$2,619,901.08
DISPOSITION OF NET INCOME			
Dividends declared			
On preferred stock, 5 per cent each year	$499,925.00	$499,925.00	
On common stock, 7¾ per cent in 1927; 7 per cent in 1926	3,644,724.25	3,292,009.00	$352,715.25
Sinking funds	49,568.55	47,420.76	2,147.79
TOTAL APPROPRIATIONS OF INCOME	$4,194,217.80	$3,839,354.76	$354,863.04
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$4,581,164.51	$7,555,928.63	—$2,974,764.12

* Credit balance.

Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1926		$51,352,491.68
ADDITIONS:		
Surplus for the year 1927	$4,581,164.51	
Profit on sale of land	196,596.26	
Unrefundable overcharges	60,135.42	
Donations in aid of side track construction	2,184.03	
Unclaimed wages and pensions—year 1921	4,323.76	
Reacquirement of securities below par	5,558.60	4,849,962.58
		$56,202,454.26
DEDUCTIONS:		
Surplus appropriated for investment in physical property	$2,852.03	
Depreciation prior to July 1, 1907, on equipment retired during year	101,275.07	
Loss on property retired	199,468.96	
Uncollectible accounts and adjustments	30,050.39	
Miscellaneous items (net)	3,862.85	337,509.30
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1927		$55,864,944.96

Operating Revenues

The total operating revenues were $91,185,736.88, a decrease of $3,354,250.28.

Freight revenue was $67,979,881.03, a decrease of $2,387,596.76.

Fluctuations in tons carried by principal groups were:

Products of agriculture	95,619 decrease =	3.51%
Animals and products	78,953 increase =	11.23%
Products of mines	838,764 decrease =	2.67%
Products of forests	131,895 decrease =	6.76%
Manufactures and miscellaneous	161,860 decrease =	1.86%
Less than carload freight	9,849 decrease =	.76%
Total	1,159,034 decrease =	2.48%

Passenger revenue was $15,570,226.82, a decrease of $698,273.27, of which $304,500.64 was interline, $382,738.10 local, and $11,034.53 commutation.

Mail revenue was $1,776,858.75, an increase of $28,335.90.

Express revenue was $2,374,521.48, an increase of $1,152.26.

Switching revenue was $1,062,951.46, a decrease of $130,453.11, largely the result of the coal strike.

Other transportation and incidental and joint facility revenues were $2,421,297.34, a decrease of $167,415.30.

Operating Expenses

Operating expenses, by groups, were as follows:

	Amount	Increase	Decrease
Maintenance of way and structures	$11,103,048.81	$25,494.72	
Maintenance of equipment	19,338,702.45		$653,607.87
Traffic	1,748,909.13	123,993.74	
Transportation	33,952,399.03	616,234.74	
Miscellaneous operations	968,538.88	55,461.59	
General	3,272,166.65	123,541.16	
Transportation for investment—credit	61,066.18		27,084.09
Total	$70,322,698.77	$264,033.99	

The increase in expense for maintenance of way and structures is the result of items of outlay such as flood expense at Cairo and Billet, Illinois, increased cost of ties applied, and rebuilding of three interlocking plants which more than offset the decrease due to a lessened application of track material in 1927.

The decrease in expense for maintenance of equipment is mainly due to a substantial reduction in the number of loco-

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motives, freight cars and passenger cars repaired.

The increase in traffic expenses is accounted for in part by increased rates of pay granted during the year and by the cost of printing additional tariffs.

The increase in transportation expenses for 1927 is due in part to increased rates of wages and to adjustment of accruals for freight loss and damage and personal injuries, in 1926, these and some other items of lesser importance more than offsetting the decrease in expenses incident to the falling off in traffic.

The increase in general expenses is principally due to higher rates of pay for clerks, effective in March, 1927.

Property Investment Accounts

Changes in the property investment accounts for the year, as shown in detail elsewhere in this report, were as follows:

Road increase	$5,596,815.53
Equipment increase	3,935,255.46
Miscellaneous physical property decrease	40,160.64
Improvements on leased railway property increase	2,322,400.52
Total increase	$11,814,310.87

Changes in Funded Debt

The amount on December 31, 1926, has been reduced as follows: $157,266,742.23

Bonds retired or purchased for sinking fund during the year:

C I St L & C Ry Co general first mortgage bonds purchased and cancelled	$71,000.00	
C I St L & C Ry Co general first mortgage bonds retired through sinking fund	60,000.00	
C C C & St L Ry Co (St. Louis Division) first collateral trust mortgage bonds purchased for sinking fund	53,000.00	
Payments falling due during the year and on January 1, 1928, on the company's liability for principal installments under equipment trust agreements as follows:		
N Y C Lines Trust of 1913, January 1, 1928	116,733.69	
Big Four Railway Trust of 1914, June 1, 1927	373,000.00	
Big Four Railway Trust of 1915, July 1, 1927	115,000.00	
Big Four Railway Trust of 1917, June 1, 1927	237,000.00	
Equipment Trust No. 44 (1920), January 15, 1927	346,700.00	
N Y C R R Co Trust of 1920, April 15, 1927	761,111.40	
N Y C Lines Trust of 1922, June 1, 1927	375,000.00	
N Y C Lines 4½ per cent Trust of 1922, September 1, 1927	224,000.00	
N Y C Lines Trust of 1923, June 1, 1927	62,000.00	
N Y C Lines Trust of 1924, June 1, 1927	427,000.00	
N Y C Lines 4½ per cent Trust of 1924, September 15, 1927	376,000.00	
N Y C Lines 4½ per cent Trust of 1925, May 15, 1927	532,000.00	4,129,545.09
leaving the funded debt on December 31, 1927		$153,137,197.14

a net decrease of $4,129,545.09.

Louisville & Jeffersonville Bridge and Railroad Company

The company advanced during the year to the Louisville & Jeffersonville Bridge and Railroad Company, the capital stock of which is owned two-thirds by this company and one-third by the Chesapeake and Ohio Railway Company, the sum of $15,000, making total advances to December 31, 1927, $262,000.

The Peoria and Eastern Railway Company

The balance due to this company by the Peoria and Eastern Railway Company on operating account on December 31, 1926, was $1,336,924.21. This balance was reduced by $99,242.98 in 1927, leaving a net balance due December 31, 1927, of $1,237,681.23. On the same date there were credits in favor of The Peoria and Eastern Railway Company for depreciation of equipment aggregating $284,857.80.

The Board wishes to express its appreciation of the loyal and efficient service of the officers and employees of the company during the year.

For the Board of Directors,
P. E. CROWLEY, *President.*

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Financial

(*Continued from page 128*)

demption on July 16 all outstanding 6 per cent equipment trust certificates of 1920, issued to cover the purchase of equipment during the period of federal control. The face amount of these certificates is $27,260,000. They are redeemable at 103 per cent, representing a premium of $817,800. In addition, the semi-annual interest coupon, payable July 15, 1928, which is attached, represents a like sum, so that the total cash payment for the company amounts to $28,895,600. The July 15th dividend warrants should be detached and presented for payment in the regular manner.

SAN LUIS VALLEY SOUTHERN.—*Operation Authorized.*—The Interstate Commerce Commission has authorized this company to acquire a line running south 32 miles from a connection with the Denver & Rio Grande Western at Blanca, Colo., which line formerly operated by the San Luis Southern. The applicant requested authority to issue $200,000 of common stock and $100,000 of income mortgage bonds. However, it was brought out that the road was sold by the sheriff on January 6 for $44,550, and the commission refused to authorized the issue of securities in any greater amount, such issue to be in the form of stock.

SOUTHERN PACIFIC.—*Acquisition.*—This company and the Visalia Electric Railroad have applied to the Interstate Commerce Commission for authority for the Southern Pacific to acquire control by lease of the Chowchilla branch of the electric railroad, extending from Chowchilla, Calif., in a general southwesterly direction 10.2 miles.

TOLEDO TERMINAL.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to sell $259,000 of 4½ per cent first mortgage gold bonds at not less than 95 at public sale, the proceeds to be used to reimburse the treasury.

UNION PACIFIC.—*Control of Saratoga & Encampment Valley.* The Interstate Commerce Commission has authorized the latter company to acquire and operate the line, formerly operated by the Saratoga & Encampment, extending southward 45 miles from a connection with the Union Pacific at Wolcott, Wyo. The new company is authorized to issue $100,000 of capital stock to be sold to the Union Pacific at par, which road is authorized to acquire it at that figure. The abandonment of this line was authorized by the commission in 1926, but the then receiver kept it in operation nevertheless until April 24, 1928. Title was then acquired by a committee of citizens who now pass the control to the Union Pacific.

Dividends Declared

Hudson & Manhattan.—Preferred, $2.50, semi-annually, payable August 15 to holders of record August 1.

Illinois Central.—Common, $1.75, quarterly; preferred, $3.00, semi-annually; both payable September 1 to holders of record August 1.

Mine Hill & Schuylkill Haven.—$1.50, payable August 1 to holders of record July 21.

Nashville, Chattanooga & St. Louis.—3½ per cent, payable August 1 to holders of record July 21.

Average Prices of Stocks and of Bonds

	July 17	Last week	Last year
Average price of 20 representative railway stocks	116.04	119.04	117.31
Average price of 20 representative railway bonds	92.92	94.28	94.01

GROSS receipts of 230,000,000 yen or approximately $109,000,000 and expenditures of 194,000,000 yen ($92,000,000) were reported by the South Manchurian Railway for the fiscal year ended March 31, 1928.

The net profit of 34,000,000 yen is figured to be equivalent to approximately $17,000,000.

Revenues from railway services alone were 113,000,000 yen while those from other operations were the remaining 117,000,000 yen of the above total. Expenses of this latter business, however, were 154,000,000 yen, bringing a loss equivalent to about $17,500,000 on these operations.

The report estimates that 1,500,000 immigrants entered Manchuria from other sections of China during the year under review. Also it states that Manchurian railways carried 2,000,000 tons more cargo than in the fiscal year ended March, 1927.

Officers

Executive

Effective August 1, **Edward Hungerford,** centenary director of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed assistant vice-president, public relations of the New York Central, with headquarters at New York.

J. W. Roberts, general superintendent of transportation on the Eastern region of the Pennsylvania, has been promoted to the newly created position of assistant vice-president, with headquarters at the Pennsylvania's Produce Terminal in New York.

E. W. Smith, who has been appointed regional vice-president of the Pennsylvania at Pittsburgh, Pa., was born in Clarksburg, W. Va., on September 21, 1885. He was graduated from the Virginia Polytechnic Institute in 1905 and entered railway service in June of that year with the Pennsylvania. Mr. Smith served in various positions in the motive power department and was appointed assistant master mechanic at Wilmington, Del., in October, 1913. He was transferred in the same capacity to Altoona, Pa., in April, 1915, where he served until the following year, at which time he became assistant engineer of motive power. He was transferred to Harrisburg, Pa., on October 10, 1917, as

E. W. Smith

master mechanic, serving in this capacity until May 26, 1918, when he was transferred to Williamsport as superintendent of motive power. He returned to Altoona as superintendent of motive power in December, 1919, and the following year he was promoted to engineer of transportation on the staff of the vice-president in charge of operation at Philadelphia. He was appointed general superintendent of motive power at St. Louis, Mo., on October 15, 1922, and two years later he was promoted to general superintendent of the Western Pennsylvania division, in which position he served until September, 1926, when he was appointed general manager of the Eastern region, serving in this position until his recent appointment as regional vice president at Pittsburgh.

Frederic E. Williamson, vice-president in charge of operation, of the Northern Pacific, with headquarters at St. Paul, Minn., has been elected executive vice-president of the Chicago, Burlington & Quincy and the Colorado Southern, with headquarters at Chicago, effective September 15. He will succeed **Claude G. Burnham,** deceased. Mr. Williamson was born on June 14, 1876, at Norwalk, Ohio, and graduated from Yale University in 1898, entering railway service in the latter year as a clerk in the office of the superintendent of the New York Central & Hudson River (now the New York Central) at Albany, N. Y. For the following 12 years he served on the New York Central as a clerk at Albany, as agent at Rome, N. Y., Utica and Troy, as chief clerk in the office of the superintendent

Frederic E. Williamson

of freight transportation at New York, as car accountant at New York, as assistant superintendent of the Harlem division and as superintendent of freight terminals at Albany. On July 24, 1910, Mr. Williamson was promoted to superintendent of the St. Lawrence division, with headquarters at Watertown, N. Y. Six years later he was transferred to the Hudson division, with headquarters at New York, and in 1918 he was promoted to general superintendent of the New York Terminal district. On July 1, 1921, he was transferred to general superintendent of the First district of the New York Central, with headquarters at Albany, and in May, 1924, he was transferred back to the New York Terminal district. Mr. Williamson was elected vice-president in charge of operation of the Northern Pacific in May, 1925.

Robert C. Falconer, engineering assistant vice president on the Erie, with headquarters at New York, has been appointed assistant vice president and chief engineer, with the same headquarters. The position of engineering assistant vice president has been abolished. Mr. Falconer was born on March 21, 1874, at St. Mary's, Pa., and was graduated from the University of Wisconsin in 1895. He entered railway service in December, 1898, and until May, 1901, served consecutively as transitman and resident engineer on the Pennsylvania, Lines west of Pittsburgh. From May, 1901, until October, 1905, he was out of railway service. On the latter date he returned and served as assistant engineer in the construction department of the Erie until October, 1911. He

Robert C. Falconer

then became division engineer of the New York division, which position he held until October, 1912, when he was advanced to principal assistant engineer of the same road. From February 1913, until January, 1916, he served as superintendent of construction, and from the latter date until July, 1918, as assistant chief engineer. At the latter time Mr. Falconer was appointed assistant to the president and chief engineer of the same road, with headquarters at New York, serving in that capacity until February, 1927, when he was appointed engineering assistant vice-president, which position he held up until the time of his recent appointment as assistant vice-president and chief engineer.

Financial, Legal and Accounting

J. R. Barse, general attorney of the Chicago & Western Indiana and the Belt Railway of Chicago, has been appointed acting general counsel of these two companies, with headquarters at Chicago, to temporarily succeed **C. G. Austin, Jr.,** vice-president and general counsel, who has been granted a leave of absence.

Operating

The headquarters of **J. F. Finnegan,** superintendent of dining car service of the Pennsylvania, have been moved from Columbus, Ohio, to Chicago.

J. T. McCarthy has been appointed assistant trainmaster of the Panhandle

division of the Pennsylvania, with headquarters at Pittsburgh, Pa.

D. M. Sheaffer, chief of passenger transportation on the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed to the position of chief of passenger transportation on the Long Island.

Effective July 9, **J. A. Stanley** has been appointed assistant superintendent, Montreal terminals division, of the Canadian Pacific, with headquarters at Montreal, Que., succeeding **R. F. Angus,** resigned.

Norman B. Pitcairn, who has been appointed general superintendent of the Eastern Ohio division of the Pennsylvania, with headquarters at Pittsburgh, Pa., was born on November 8, 1881, at Harrisburg, Pa. He was educated at Princeton University and entered railway service on June 29, 1901, as rodman on the Pennsylvania, serving consecutively to November 9, 1919, as rodman in the office of the chief engineer, transit man, assistant supervisor and supervisor at various points. On November 10, 1919, he was appointed division engineer on the Pittsburgh division. He was transferred to the Middle division the following year and in July, 1922, he was transferred to the New York division. In October, 1923, he was appointed superintendent of the Erie & Ashtabula division, later serving in the same capacity on the Middle division and the New York divison, where he served until his recent appointment as general superintendent of the Eastern Ohio division.

Norman B. Pitcairn

James R. Downes, who has been appointed chief of freight transportation on the Pennsylvania, with headquarters at Philadelphia, Pa., was born on October 23, 1883, at Tyrone, Pa. He was educated at Tyrone High school and entered the service of the Pennsylvania on May 25, 1901, as a clerk in the superintendent's office at Pittsburgh, Pa. He was later transferred in the same capacity to the general manager's office at Philadelphia and on January 1, 1914, he was promoted to acting chief clerk to the general manager, serving in that capacity until July 18, 1914, when he left the service of the Pennsylvania. He re-entered the service of the Pennsylvania in June, 1918, and was appointed chief clerk to the regional director, Allegheny Region, serving in that position during the United States Railroad Administration. He became chief clerk to the vice-president of the Central region on March 1, 1920 and three years later he was promoted to superintendent of freight transportation, in which position he served until July 1, 1928, when he was appointed chief of freight transportation.

James R. Downes

Edward D. Cotterell, who has been promoted to general superintendent of the Manitoba district of the Canadian Pacific, with headquarters at Winnipeg, Man., has been in the service of that railroad for about 18 years. He was born on January 26, 1881, in Canada and after attending public school at Montreal, Que., entered railway service at the age of 16 years as an office boy on the Canadian Pacific. In November, 1898, he was advanced to telegraph operator at Montreal, becoming an agent and telegraph operator on the Crows Nest Pass division in the following year. For a short period in 1900 Mr. Cotterell served as an agent and telegraph operator on the Alberta Railway & Irrigation Company. In the same year he became a telegraph operator on the New York Central at Rensselaer, N. Y., serving later as an operator at New York, and as train dispatcher, night chief dispatcher and chief train dispatcher on the Hudson division until 1913. Mr. Cotterell then became inspector of transportation on the Western lines of the Canadian Pacific. In November, 1915, he was promoted to superintendent of car service and in July, 1921, he was again promoted to superintendent of transportation of the Western lines, with headquarters at Winnipeg. Mr. Cotterell's promotion to general superintendent of the Manitoba district became effective on July 1.

Edward D. Cotterell

James Gordon Sutherland, who has been promoted to the position of superintendent of transportation of the Western lines of the Canadian Pacific, with headquarters at Winnipeg, Man., has been in the service of that railroad for more than 25 years. He was born on November 24, 1882, at Aulac, N. B., and entered railway service in May, 1898, on an extra gang on the Intercolonial (now part of the Canadian National). From 1899 to 1902 Mr. Sutherland was a telegraph operator on the Intercolonial at Aulace, Amherst, N. S., and Springhill and Moncton, N. B. He was then appointed assistant agent at Sackville, N. B., entering the service of the Canadian Pacific in April, 1903, as a telegraph operator at Field, B. C. Subsequently Mr. Sutherland served as a telegraph operator and relief agent on the Revelstoke division, as a dispatcher at Revelstoke, B. C., at Calgary, Alta., and Cranbrook, B. C., as chief dispatcher at Calgary and Medicine Hat, Alta., and as car service agent in the Alberta district. In 1917 he was promoted to the position of inspector of transportation of the Western lines at Winnipeg, where he remained until August, 1926, when he was again promoted to the position of superintendent of the Calgary division, with headquarters transferred to Calgary. Mr. Sutherland's promotion to the position of superintendent of trans-

James Gordon Sutherland

portation became effective on July 1.

Otto F. Ohlson, who has been appointed general manager of the Alaska Railroad, with headquarters at Anchorage, Alaska, effective August 1, has been in the service of the Northern Pacific since 1901. He was born at Sperlingsholm, Sweden, on June 6, 1870, and first entered railroad service as a telegraph operator and agent in Sweden in 1887. From 1890 to 1893 Mr. Ohlson served as a telegraph operator on South American

Otto F. Ohlson

and East Indian railroads and in May of the latter year he became a telegraph operator on the Pennsylvania. Here he advanced successively through the positions of switchman, yard foreman and assistant passenger trainmaster and in April, 1901, he became operator and agent on the Northern Pacific. Later Mr. Ohlson served consecutively as dispatcher, assistant to night chief dispatcher, chief dispatcher, trainmaster and assistant to the general superintendent. As trainmaster he was located at Seattle, Wash., and while assistant to the general superintendent he had headquarters at St. Paul, Minn. In January, 1918, he joined the engineering corps of the United States Army as a captain, was appointed superintendent of terminals in France and in November, 1918, was appointed general superintendent in France and gained the rank of lieutenant-colonel, which he has retained in the Reserve corps. Mr. Ohlson returned to the Northern Pacific in December, 1919, as assistant to the general superintendent and in May, 1921, he was appointed a trainmaster. In May, 1922, he was promoted to the position of assistant superintendent at Billings, Mont., then serving for short periods as acting superintendent of the St. Paul division and as acting superintendent of the Montana division. Mr. Ohlson was promoted to superintendent of the Yellowstone division, with headquarters at Glendive, Mont., in 1926 and on August 1, 1927, he was transferred to the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minnesota.

Traffic

G. A. Ryser has been appointed assistant general freight agent of the Texas & Pacific, with headquarters at Dallas, Tex.

J. C. Batham, traveling passenger agent for the Atchison, Topeka & Santa Fe at Des Moines, Iowa, has been promoted to general agent at the same point, succeeding **C. A. Moore** who has retired from active service.

William Haywood, general freight agent of the Illinois Central in charge of solicitation, with headquarters at Chicago, has been promoted to assistant freight traffic manager in charge of solicitation, with headquarters at the same point. **F. H. Law,** general freight agent of the Northern and Western lines of the Illinois Central with headquarters at Chicago, has been promoted to assistant freight traffic manager in charge of rate adjustments, tariffs and related subjects, except coal and coke traffic, with headquarters at the same point. **F. C. Furry,** assistant general freight agent of the Northern and Western lines at Chicago, has been promoted to general freight agent of these lines to succeed Mr. Law. **R. P. DeCamp,** assistant coal traffic manager, with headquarters at Chicago, has been appointed assistant general freight agent of the Northern and Western lines, succeeding Mr. Furry. **C. E. Stailey,** assistant general freight agent in charge of solicitation on the Northern and Western lines, with headquarters at Chicago, has been promoted to general freight agent in charge of solicitation, succeeding Mr. Haywood. **C. L. Netherland,** assistant general freight agent on the Southern lines, with headquarters at Memphis, Tenn., has been promoted to general freight agent in charge of solicitation on the Southern lines, with headquarters in the same city. **O. L. Grisamore** has been appointed assistant general freight agent at Chicago to replace Mr. Stailey.

William Haywood, who has been promoted to assistant freight traffic manager of the Illinois Central, with headquarters at Chicago, was born on May 30, 1884, at Lancaster, England. He entered railway service at the age of 17 years as a messenger in the office of the traffic manager of the Illinois Central. In 1903 he was advanced to secretary to the freight traffic manager and from 1906 to 1917 Mr. Haywood served successively as secretary to the vice-president, secretary to the president, and chief clerk to the traffic vice-president. He was promoted to assistant general freight agent in April, 1917, becoming assistant to the traffic manager on March 1, 1920. Mr. Haywood was promoted to general freight agent, with headquarters at Chicago, in December, 1921. His promotion to assistant freight traffic manager in charge of solicitation became effective on July 16.

William Haywood

Frank C. Reilly, assistant to the traffic manager of the Inland Waterways Corporation, with headquarters at St. Louis, Mo., has been appointed European traffic manager of the St. Louis-San Francisco, with headquarters at Paris, France, and London, England, a newly created position. Mr. Reilly was formerly freight traffic manager of the Frisco.

Engineering, Maintenance of Way and Signaling

Karl Hammann has been appointed assistant enginer of maintenance of way on the Long Island, with headquarters at Jamaica, N. Y.

B. F. Lollis, assistant signal engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, resigned on July 15 to become western representative of the Waterbury Battery Company at Chicago.

G. H. Schlotterer, supervisor on the Eastern division of the Pennsylvania at Conway, Pa., has been promoted to division engineer of the Indianapolis division, with headquarters at Indianapolis, Ind.

F. A. Isaacson, assistant mechanical engineer of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been appointed acting engineer of car construction, with headquarters at the same point, succeeding **J. T. St. Clair,** resigned to enter another industry.

Mechanical

H. D. MacKenzie, master mechanic on the Canadian National at Campbellton, has retired under the pension regulations of that road. **Page Carlisle,** locomotive foreman at Moncton, N. B., will succeed Mr. MacKenzie as master mechanic at Campbellton.

Archibald Sturrock, who was formerly assistant superintendent of motive power of the Western lines of the Canadian Pacific, with headquarters at Winnipeg, Man., has been appointed master mechanic of the Esquimalt & Nanaimo, with headquarters at Victoria, B. C., succeeding **Walter Byrd,** who has retired from active service.

Henry B. Bowen, who has been promoted to assistant superintendent of motive power of the Western lines of the Canadian Pacific, with headquarters at Winnipeg, Man., was born on May 17, 1884, at Derbyshire, England. At the age of 17 years he became a special apprentice with Crossley Brothers, Manchester, England, and simultaneously he completed a three-year course in the Manchester School of Technology. Mr. Bowen entered railway service on May 15, 1905, as an apprentice in the Angus shops of the Canadian Pacific at Montreal, Que. The following year he was advanced to draftsman at Winnipeg and in 1908 he was promoted to foreman of the wheel and tender shop at the same point. In December, 1909, Mr. Bowen was promoted to shop engineer and two years later he was appointed chief draftsman in the motive power department. He was promoted to works manager at Winnipeg in January, 1920, and his promotion to assistant superintendent of motive power became effective on July 1.

Obituary

H. G. Benedict, for many years general eastern agent on the Atlanta, Birmingham & Coast, with headquarters at New York, died on June 17 at Atlanta, Ga.

Franklin Duane, former assistant to the general superintendent, Southern division, on the Pennsylvania, died at Princeton on June 16. Mr. Duane retired from the service of the Pennsylvania in October, 1927, after having served 44 years with that road.

Frank A. Farnham, counsel for the New York, New Haven & Hartford, died on June 8 at Lake Sunapee, N. H. Mr. Farnham had been in the service of the New Haven since 1898 and previous to that time had served with the old New York & New England and the New England, which were later absorbed by the New Haven.

George H. Steinberg, treasurer of the Terminal Railroad Association of St. Louis, died at St. Mary's Infirmary, St. Louis, Mo., on July 12, after an illness of several weeks. Mr. Steinberg, who was 72 years of age, had been granted a three months' leave of absence just before his illness. He had been in the service of the Association for more than 51 years. He was born at St. Louis on November 6, 1855, and entered railway service on April 2, 1877, as a collector for the Association on the upper roadway of the Eads bridge at St. Louis. On December 1, 1878, he was advanced to foreman of the collectors in train service on the lower roadway of the same bridge and 12 years later he was promoted to paymaster of the Association. Mr. Steinberg was elected treasurer on April 4, 1917.

George A. Montgomery, president of the Algoma Eastern and vice-president and general manager of the Algoma Central, who died on June 27, was born on February 11, 1871, at Bradford, Ont. He entered railway service in September, 1886, as assistant to the agent on the Northern at Newmarket, Ont. The following year he went to Powasson, Ont., as agent for the Grand Trunk, where he remained until March, 1889, when he became freight agent on the Canadian Pacific at North Bay, Ont. He served in that capacity until March, 1890, at which time he became chief clerk at Sudbury, Ont. In 1893 he was transferred to the Lake Superior division of the same road, where he served as chief clerk to the superintendent, and in June, 1900, he entered the service of the Algoma Central & Hudson Bay at Sault Ste. Marie, in the same capacity. Two years later he became superintendent of the Manitoulin & North Shore. From August, 1910, to March, 1911, Mr. Montgomery served as superintendent on the Algoma Central & Hudson Bay and from March 1, 1911, to October 15, 1913, he served in that capacity for the same road and also for the Algoma Eastern. He was promoted to general superintendent of the same roads in

George A. Montgomery

October, 1913, serving in that capacity for three years. In May, 1916, he was appointed acting general manager and in December of the same year he was promoted to vice-president of the Algoma Central & Hudson Bay. In October, 1920, he was also appointed president of the Algoma Eastern, which positions he held up until the time of his death.

Garrett Davis, formerly principal assistant engineer of maintenance of way, assistant chief engineer and superintendent of the Chicago, Rock Island & Pacific, who retired from active service on September 1, 1925, died at Calgary, Alta. on July 16. At the time of his retirement Mr. Davis had completed 48 years in the service of that railroad. For the past three years his home has been in Kansas City, Mo.

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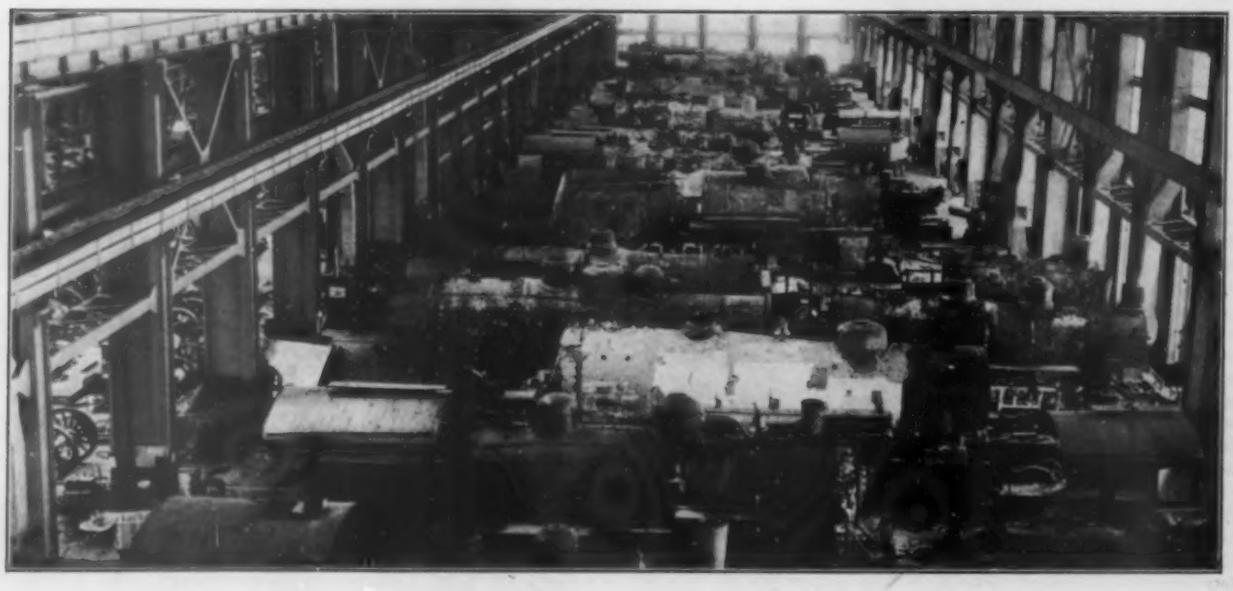

A View of a Locomotive Erecting Shop, Showing Lighting Arrangements